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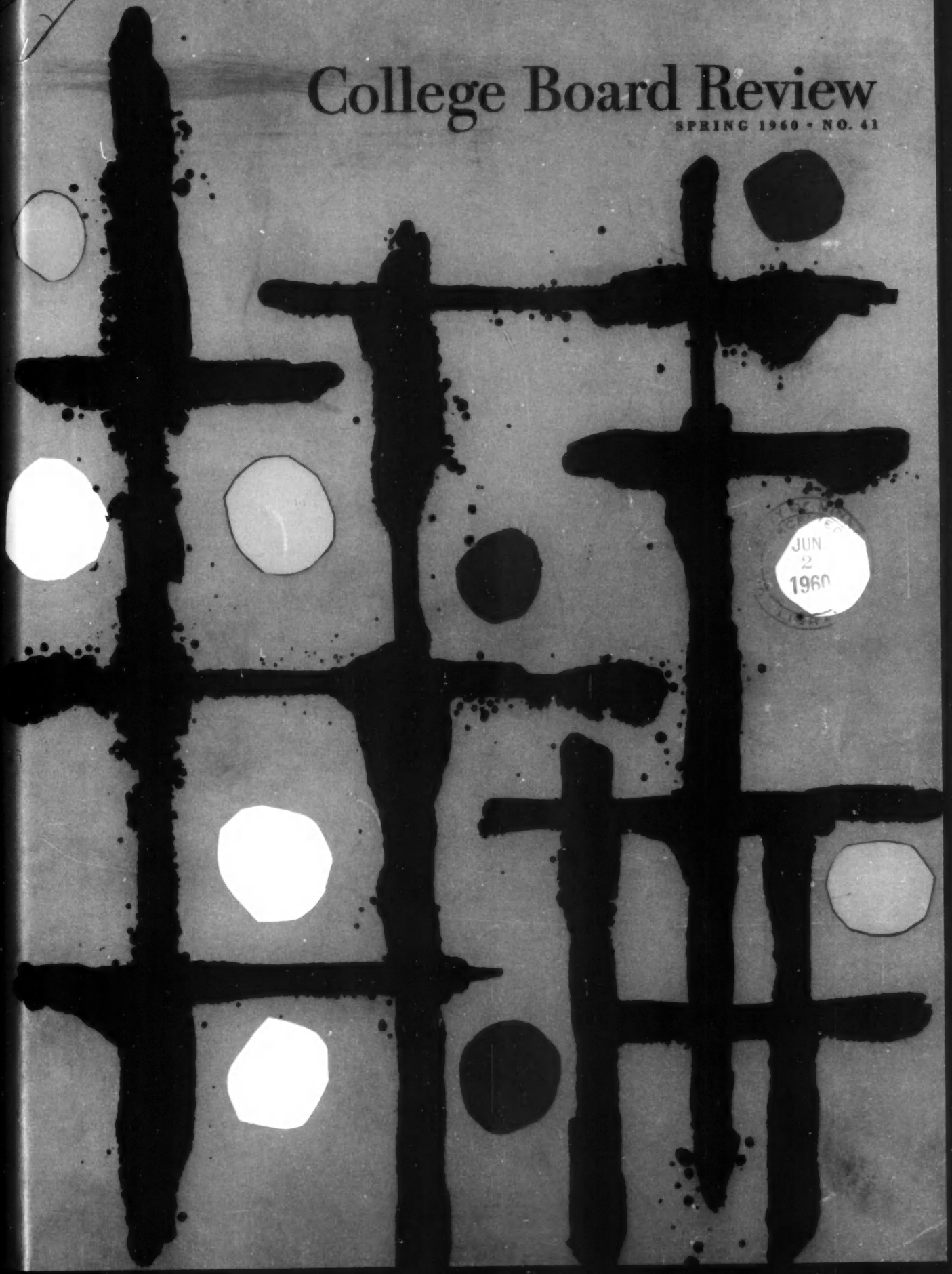

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College Board Review

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Contents

News of the College Board, 1

College Board Research Notes, 3

Mathematics in transition, 5
by Julius H. Hlavaty

Admissions criteria reconsidered, 9
by Robert L. Ebel

"Walter will never be a dope fiend....", 14
by Jonathan Pearson, III

Advanced placement at Harvard, 17
by Edward T. Wilcox

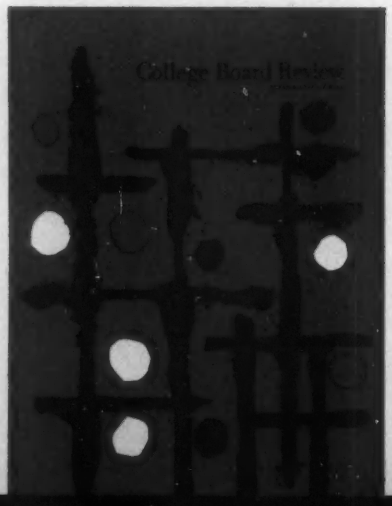
Creating a climate of quality, 21
by Charles C. Cole, Jr.

Five college environments, 24
by C. Robert Pace

Which freshmen will fail?, 29
by M. Bryce Leggett

College Board member colleges, 32

News of the College Scholarship Service, 34



Illustrations: Cover artist Dan Shapiro employs the variously positioned round shapes within separate and differing enclosures to express how environment—specifically campus environment—influences the awareness and attitudes of those persons in it; a theme which is discussed in three of the articles in this issue. The frontispiece and the drawings on pages 6, 7, 8, 25, 26, and 27 are by Vincent Malta; all other illustrations in these pages are by Stanley Wyatt.

NEWS OF THE COLLEGE BOARD

Test fees reduced

Effective 1960-61: Fees for the Scholastic Aptitude Test, the Achievement Tests, and the Preliminary Scholastic Aptitude Test will be substantially reduced in 1960-61 as a result of actions taken at the March meeting of the College Board trustees. Fees of the College Scholarship Service were similarly cut at the same time (see page 34).

Beginning with the tests administered in December, the Scholastic Aptitude Test fee will be changed from the current $6 to $4, and the Achievement Test fee from $9 to $6. The fee for the Preliminary Scholastic Aptitude Test, given in October, will be reduced from $1 to $.50.

Nonprofit principle: The changes in fees were made in accordance with the Board's status as a nonprofit service agency of schools and colleges. They were made possible by two factors: operational economies achieved by Educational Testing Service through the use of new facilities, methods, and equipment; and the increasing numbers of students to whom the economies apply. It is expected that about 1,300,000 College Board tests will be taken in the 1959-60 academic year as compared with approximately 1,000,000 in 1958-59 and 750,000 in 1957-58. It is estimated that the effect of all the fee reductions in 1960-61 will be a total savings of about $2,650,000 for students and their parents.

Noyes named acting president

To relieve Bowles two years: Edward S. Noyes, a former chairman of the College Board, has been appointed acting president of the Board for a two-year period beginning July 1. He will serve during the absence of President Frank H. Bowles who, as reported in the last issue of the *Review*, has been granted a leave of absence by the trustees of the Board in order to direct an international study of university admissions theory and practice.

Dr. Noyes, currently United States Office of Education regional representative for higher education under the National Defense Education Act, was elected an honorary representative-at-large of the Board last fall in recognition of his many contributions to its work and development during the past 40 years. He has served the Board in virtually every possible capacity: as the representative of Yale University, where he was chairman of the board of admissions; as reader, chief reader, and chief examiner for College Board English tests; as vice chairman and later chairman of the Board; and as a charter trustee.

Test offerings broadened

Hebrew, Russian added: Tests in Hebrew and Russian will be offered by the College Board for the first time in 1961. The tests, which will be administered at Board testing centers on the regularly scheduled March date only (March 18), will be among the Achievement Tests available to students. The other one-hour objective tests in foreign languages which are part of the Achievement Test program are in French, German, Latin, and Spanish. They will continue to be administered at Board centers on the December, March, May, and August testing dates.

Tests in Greek and Italian will not be given at Board centers but will be available to schools for their administration to interested students. Students taking the March or May Achievement Tests will be entitled to take the Greek or Italian test at no additional fee when it is given by their school.

Italian listening test: A test in Italian will be added in 1961 to the listening comprehension test offerings, which this year included only French, German, and Spanish. It is anticipated that a Russian listening comprehension test will become part of this program in 1962. These tests are administered by schools to their students on a single date approximately two weeks before the Board's March Achievement Test date. They are available at no additional charge to students who register for the March or May Achievement Tests.

Writing Sample scheduled

December, January dates: Administrations of an English essay exercise to be known as the Writing Sample have been scheduled for the Board's December 3 and January 14 testing dates in 1960-61. The Writing Sample may be taken in December either separately from the Achievement Tests, at a fee of $2, or in place of one of the three Achievement Tests to which candidates are entitled for the $6 fee. On the January date, when Achievement Tests are not given, the Writing Sample will be offered in the afternoon at the $2 fee.

Students will be given one hour to write an essay on an assigned topic. Copies of their essays, ungraded, will be sent to their schools and to the colleges they name.

In an announcement to schools and colleges of the Writing Sample's introduction, the Board's committee on examinations pointed out that the new offering reflected agreement among the Board's membership that learning to write clearly and accurately is of first importance to intellectual growth and concern that many school and college students fall short of reasonable standards of writing ability.

The committee emphasized that the

Board has reacted to this situation by creating a commission on English which will explore ways of improving the teaching of English. The Writing Sample was characterized as an intermediate measure adopted in response to the explicit wishes of at least a third of the Board's member colleges.

The committee also noted that the Board will survey the uses colleges make of the essays, will evaluate the Writing Sample's contribution to the admissions process, and will develop recommendations regarding its most effective use.

Schools say tests excessive

Cite time and duplication: A recent survey conducted by the College Board showed that secondary schools feel there is excessive duplication and repetition involved in the great variety of tests that are currently being given in the eleventh and twelfth grades. The survey was concerned with tests other than those given in the context of instruction, such as quizzes and final examinations.

Based on questionnaires sent to 266 large public schools having substantial numbers of college-going students, the study notes that its results are far from definitive. Some conclusions on the national testing pattern can be drawn, however, from comments contained in responses to the survey.

Time actually devoted to testing varied from five and one-half days in one school to no testing time in another school. The average for all schools was one day per student per year. Many of the comments indicated that the "endless hours" of orientation and follow-up of the test results were one of the primary sources of the complaints.

Two sources shown: The problem seems to arise from two sources: the growing number of requests by national testing programs for test results to be used for scholarship and admissions purposes, and the demands of the school's own testing program for guidance and evaluation of the student. At least some of the duplication between the local and national tests seems to be accounted for by the confusion in the schools as to the nature and purpose of specific tests. A total of 88 different tests and testing programs were named by the schools.

The report concludes with recommendations for reducing the number and variety of tests required of eleventh and twelfth-grade students, effecting a clear and sensible integration of the school's local testing program, and a minimization of the confusion and conflict among the national testing programs.

The full report, "A Survey of the Use of Tests in the 11th and 12th Grades," will be sent to participating schools and to the representatives of Board member institutions and associations. Other interested persons may obtain copies on request by writing to: College Entrance Examination Board, 475 Riverside Drive, New York 27, New York.

New publications

President's report: An unusual edition of the Report of the President of the College Board was published in April and widely distributed to school and college officers. Entitled *Admission to College: A Perspective for the 1960's*, the report is an analysis by Frank H. Bowles of the major educational and social factors which have determined the direction and scope of the Board's development in recent years, and of the trends that can be perceived in the foreseeable future.

In addressing himself to an appraisal of the Board's role in education, Mr. Bowles departs from the traditional annual report accounting of Board activities. Instead, he considers against a more extended frame of reference those areas in which the Board has responded most significantly to evolving school and college needs. The report discusses seven topics in three periods of time: 1947-57 ("The Reshaping of the Board"), 1957-59 ("Preparation for the New Decade"), and 1960-70 ("Prospects and Problems"). The topics covered in each of the three sections are: Student Identification and Guidance; the Nature of College Preparation; Student Finance; Admissions Operations; Organization and Membership; Research; and Staff Functions and Finance. The price per copy is $.50.

Description of Board: Included in the mailing of Mr. Bowles' report was a new booklet, *The College Board Today*, which briefly describes the organization and purpose of the Board, and its current testing programs, services, research interests, and associational activities. It also contains a list of the member schools, colleges, and associations. This publication is free.

The Search for Talent: The seventh in the series of annual *College Admissions* volumes contains the papers presented last fall at the Board's Colloquium on College Admissions. A descriptive announcement of the book, which is entitled *The Search for Talent*, is scheduled for mailing in May to college admissions officers and registrars.

Test information revised: Revised editions of the informational materials relating to the Scholastic Aptitude Test, Achievement Tests, and Preliminary Scholastic Aptitude Test are now in preparation for distribution in 1960-61. These include the two booklets which describe the Scholastic Aptitude Test and Achievement Tests, the two leaflets for students which provide interpretive information on the test scores, and a single booklet for counselors which will consolidate interpretive materials now contained in separate booklets on the Scholastic Aptitude Test and Achievement Tests and the Preliminary Scholastic Aptitude Test.

A sample set of these publications, together with the 1960-61 *Bulletin of Information*, which will cover the admissions tests to be offered, their dates, fees, and testing centers, will be sent to secondary schools and colleges in September. The schools have been asked, through a spring mailing, to place advance orders for the number of descriptive booklets and the *Bulletin* which will be needed by their students during 1960-61. The September mailing will contain a supplementary order form which will enable schools to order the admissions tests' interpretive leaflet for students and the booklet for counselors, as well as any additional copies of the descriptive booklets and *Bulletin* that may be needed.

Copies of the interpretive booklet for counselors and the Preliminary Scholastic Aptitude Test interpretive leaflet for students will be distributed to schools in the fall at the time the test scores are reported to them.

All of these College Board informational publications will be free of charge.

COLLEGE BOARD RESEARCH NOTES

Differential prediction survey

National program dubious: A successful national program of "differential prediction" probably cannot be introduced at present, according to Paul L. Dressel, director of institutional research, Michigan State University.

A college or university that uses a system of differential prediction forecasts not only the overall grade average of the entering student but his likely grades in each of various courses or course areas. Dr. Dressel made his recommendation in presenting a survey he conducted for the committee on aptitude testing of the College Board.

In the survey, Dr. Dressel reviewed a number of differential prediction systems in use. His report describes fully the systems employed at Harvard University, Pennsylvania State University, and the University of Washington.

Commenting on the difficulties that would be faced by a College Board program in differential prediction, Dr. Dressel observed in his report:

"It is neither economical nor sensible to assume that every department or curriculum constitutes a distinctive field. Colleges in large universities are themselves conglomerates of unrelated curricula and some curricula in different units of a university may be more closely related than curricula within the same unit.

"In short, we do not know what groups of curricula or departments are reasonably similar in essential nature nor do we know in what respects apparently different fields are actually different. This is not to say that the situation is hopeless but rather that it is so complex that much research remains to be done in individual institutions before any pattern applicable across institutions can be found..."

Copies of the survey report, "A Report on Differential Prediction and Placement in Colleges and Universities," will be sent upon request to the College Entrance Examination Board, 475 Riverside Drive, New York 27, New York.

Peer group study approved

To use attitude questionnaire: An exploratory study of peer group influences on academic achievement will be conducted for the College Board during 1960-61 by Peter H. Rossi, associate professor of sociology at the University of Chicago. In the recently authorized study Dr. Rossi will attempt to discover the ways in which a student's "interpersonal environment" affects his college grades as well as his scores obtained on repeated administrations of objective achievement tests.

The term "interpersonal environment" refers to those persons with whom an individual is in frequent contact. Dr. Rossi will use a new attitude questionnaire to identify the social systems in a small liberal arts college. In learning more about the formation of peer groups, Dr. Rossi hopes to specify ways in which important elements of college life, such as dormitory groupings or class assignments, can be modified by the college to improve academic performance.

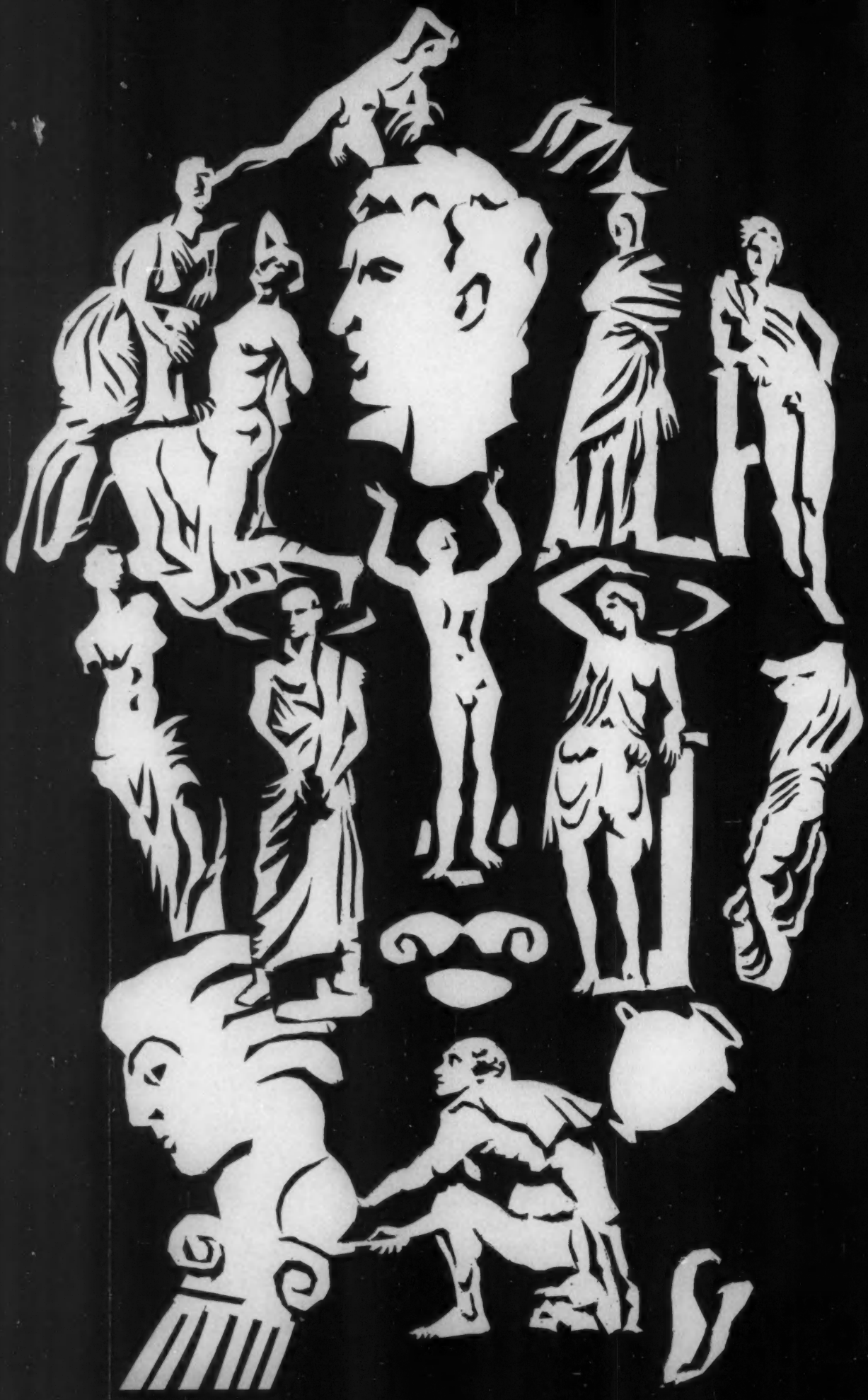
In addition, other environmental influences on the student, such as dating patterns and faculty-student relationships, will be within the scope of the study.

Reports on college success

Biographical inventory published: The successful use of a biographical inventory in predicting adjustment and achievement of college students was described in the last issue of the *College Board Review*. The research report on which the description was based entitled, *A Biographical Inventory: The Validation of a Biographical Inventory as a Predictor of College Success*, by Anne Anastasi, Martin J. Meade, and Alexander A. Schneiders of Fordham University, will be available this June and will be distributed to representatives and admissions directors of Board member institutions and associations. Other interested persons may order copies from the College Entrance Examination Board, c/o Educational Testing Service, Box 592, Princeton, New Jersey, or Box 27896, Los Angeles, California. The price is $2.

Part II of the study, dealing with sociometric data, and Part III, a study of discordant cases, will be available in June in mimeographed form for persons interested in these specialized aspects of the study. Copies of these two sections of the study may be obtained by writing the College Entrance Examination Board, 475 Riverside Drive, New York 27, New York.

Reports available: Copies of research reports dealing with the prediction of college success previously discussed in the *Review* and also available on request are as follows: "Nonintellective Factors and Faculty Nominations of Ideal Students," by Donald R. Brown of Bryn Mawr College; "The Effects of Training in Mechanical Drawing on Spatial Relations Test Scores as Predictors of Engineering Drawing Grades," by Charles T. Myers of ETS. The following reports are by Marjorie A. Olsen and William B. Schrader of ETS: "Relation of Preliminary and Final Scholastic Aptitude Test Scores to College Grades: Preliminary Report," "The Use of Preliminary and Final Scholastic Aptitude Test Scores in Predicting College Grades," and, not previously reported, "The Comparative Achievement of Final-only and Preliminary-final Scholastic Aptitude Test Candidates."



BY JULIUS H. HLAVATY

Mathematics in transition

The golden age of mathematics, the nineteenth century, saw the making of more mathematics than all previous history. In the first half of the twentieth century, again more mathematics was produced than in all previous history, including the golden age. That means that the tons (literally) of clay tablets of the Babylonians, the archives of the Egyptians, the august work of the Greeks, the splendid achievements of the Hindus and Arabs, and the revolutionary advances of the age of Newton have been more than matched by relatively recent forward steps in mathematics.

In all the great ages, the growth of mathematics was accompanied by—causing and being caused by—expanding uses and applications. A demand for people to maintain the development of mathematics and for those who would utilize it also confronted these ages with the problems of mathematical education and specifically the problems of elementary and secondary education.

Our century and our country have in particular wrestled with the problem of mathematics in secondary education. A brief review of this story is in order, if only to put into proper perspective the current feverish activity in mathematical education.

A fruitful collaboration between mathematicians and school people culminated in 1923, in the publication by the Mathematical Association of America of the report, *The Reorganization of Mathematics in Secondary Education.*

Hardly was the ink dry on this report when a new phenomenon interfered radically with the nascent implementation of its recommendations. This was the explosive expansion of the secondary schools. Though the report became (and is even today) the major guide in curriculum construction and textbook writing, it soon became evident that its recommendations were neither desirable nor feasible for large sections of the new secondary school population.

During the 1930's an increasing awareness of the discrepancy between the various needs and drives of the high school pupil and the largely academically oriented point of view of the report led teachers to a reconsideration of the whole problem of the high school program in mathematics. It is significant and a mark of the times that the mathematicians and the educators found it impossible to formulate a universally acceptable program. In fact, two basically different reports on the problem emerged: one, *Mathematics in General Education,*[1] and the other, *The Place of Mathematics in Secondary Education,* which was the Report of the Joint Commission of the Mathematical Association of America and the National Council of Teachers of Mathematics.[2]

Commission appointed

World War II prevented any real testing of the comparative values of the two sets of recommendations and the postwar period placed the whole problem of mathematical education in such a new dimension that the whole problem called once more for a fundamental re-examination of all the premises. The increasing dissatisfaction with the situation that prevailed in mathematical education generated a great many attempts at partial and local solutions. These various attempts found a focus in the work of the Commission on Mathematics. The genesis and the

[1] Progressive Education Association Commission on the Secondary Curriculum, Committee on the Function of Mathematics in General Education (New York: D. Appleton Century, 1940).

[2] (New York: Bureau of Publications, Teachers College, Columbia University, 1940).

The whole—the shape of man's thinking—is here represented in terms of its inheritance of past cultures expressed as incarnate comments on the nature of beauty and truth.

operations of the work of the Commission on Mathematics were reported by Albert E. Meder, Jr., then executive director of the Commission, in the winter of 1958.[3]

The Commission, consisting of university mathematicians, leaders in the training of teachers of mathematics, and secondary school teachers, was organized in 1955.

This group spent four busy years formulating tentative proposals, discussing them, tearing them apart, rejecting some, reformulating others, and elaborating still others. Not only did each proposal have to survive the gamut of the criticisms and reactions of the individual members of the Commission, but each was made the subject of careful and critical review by the profession at large. Representatives of the Commission presented the developing program of the Commission to innumerable local, regional, state, and national conferences of teachers of mathematics, mathematicians, and educators. The reactions of the profession at large had a marked influence on the final report.

Nine-point program proposed

The Commission succeeded in formulating and proposing a nine-point program for college-capable students:

1. Strong preparation, *both* in concepts *and* in skills for college mathematics at the level of calculus and analytic geometry.
2. Understanding of the nature and role of deductive reasoning—in algebra, as well as in geometry.
3. Appreciation of mathematical structure ("patterns")—for example, properties of natural, rational, real, and complex numbers.
4. Judicious use of unifying ideas—sets, variables, functions, and relations.
5. Treatment of inequalities along with equations.
6. Incorporation with plane geometry of some coordinate geometry, and essentials of solid geometry and space perception.
7. Introduction in grade 11 of fundamental trigonometry—centered on coordinates, vectors, and complex numbers.
8. Emphasis in grade 12 on elementary functions (polynomial, exponential, circular).
9. Recommendation of additional, alternative units for grade 12: *either* introductory probability with statistical applications, *or* an introduction to modern algebra.

This nine-point program was elaborated in the first volume of the Report of the Commission on Mathematics, *Program for College Preparatory Mathematics*, which was published in the spring of 1959.

To give a concrete illustration of the point of view that should guide the creation of a new curriculum in mathematics, and to provide teachers with some of the new subject-matter material which is proposed in the program, the Commission found it necessary during the four years of its work to issue a number of small publications in the form of pamphlets. These materials were improved, others of a similar nature were written, and the whole was incorporated in the second volume of the Report, the *Appendices*.

During the four years of its work, the Commission had accumulated a mailing list of 13,000 interested people — teachers, students, mathematicians, and parents. During the period of preparation of the Report, these interested people had absorbed hundreds of thousands of pamphlets, the piecemeal preliminary products of the Commission's work in progress.

The first free distribution of *Program for College Preparatory Mathematics* reached some 39,000 readers including the Commission's mailing list, the membership of the principal professional organizations, the American Mathematical Society, the Mathematical Association of America, the National Council of Teachers of Mathematics, and thousands of school superintendents. Since that time the demand for both volumes of the Report has been large and steady.

The interest in the Report of the Commission has been country-wide and world-wide. The Commission receives a steady stream of questions, comments, and requests from every state in the Union and from such far places as Nigeria, Japan, Poland, Israel, Australia, Sweden, Thailand, the Philippine Islands, and South America. There is every indication that the work of the Commission will have profound effects on the secondary school curriculum. This is evidenced by the character of the correspondence which is received by the Commission.

In the first place, there are continuing requests for the publications of the Commission—even those that are out of print. It is clear that the wave of unprecedented interest and enthusiasm for reforming mathematical instruction is reaching segments of the professional and lay world that were never involved before; among them groups of administrators at the secondary school level and interested parents. These important new audiences are first of all interested essentially in the generalities of the Commission's work: the reasons for the need for reform; the problems of high school mathematics; and the general tenor of the Commission's recommendations.

In addition, many individual teachers, school systems, and textbook writers are appraising the specific implications of the Report. It seems certain that this scrutiny will bear significant fruits. The hectic and sometimes hysterical reaction to Sputnik and the con-

[3] "Mathematics for today," *College Board Review*, No. 34, pp. 7-10.

sequent public appraisal of school science and mathematics programs has settled down to a plodding and stubborn reconstruction of the mathematics curriculum. Individual teachers who had experimented with the early publications of the Commission (*Sets, relations, and functions; Introduction to algebra;* and so on[4]) are now ambitiously rewriting their courses in mathematics, when they are in a situation where they are free to do so. Groups of teachers who used the Commission's material in the summer institutes organized and financed by the National Science Foundation are the cores of committees which are rewriting syllabi for whole school systems. Writers of established, successful texts, as well as those hopeful of writing the texts of the future, are knuckling down to the task of translating the specific recommendations of the Commission into textbooks.

This category of correspondents reads Chapter 4 of the Report ("Organization: a proposed sequence for the Commission's program") with a microscope. They ask searching questions; they point out missing commas. They want to know, "What do you mean by this?" They also read the *Appendices* carefully and freely adapt (and sometimes improve) the material. In doing this, of course, they carry out the very intentions of the Commission. But most of all, they ask, "Is this what you mean?" and "How do we know this will produce better results than the traditional course of study?"

An increasing segment of persons responding to the Report is made up of tough-minded administrators who are working on the implementation of a new program in mathematics. Local school boards and state departments of education have strengthened, or in some cases initiated, programs of supervision in mathematics. They have been brought face to face with the concrete problems of teacher-training and retraining in service: organizing and subsidizing in-service programs and finding people to conduct these training courses. Often, they ask the Commission for speakers and instructors. State departments of education are reviewing their certification requirements and they also ask for advice. It is clear that the fifth chapter of the Commission's Report ("Implementation: the vital role of teacher education") is becoming increasingly pertinent for all concerned, from individual teachers to state-wide systems. The schools of education are undertaking serious reviews of their programs for future teachers and for teachers now in service. The growing program of the National Science Foundation is a part of this major activity in teacher education, and recently, the American Association for the Advancement of Science decided to use Chapter 5 of the Report in its regional conferences on the Teacher Preparation-Certification Study.

Consensus emerging

In the beginning stages of this experiment in mathematical education it was easy to distinguish the role of the Commission from that of the quite different but contemporaneous Advanced Placement Program and the Illinois Plan. The Commission assumed an important position at the yearly summer and in-service training institutes through the use of its pamphlets and particularly of its *Introductory Probability and Statistical Inference*,[5] an experimental text used and reviewed very extensively, perhaps because they were the only materials available.

Today the role of the Commission is still quite distinctive and an important source of the swelling stream fed also by the massive work of the School Mathematics Study Group, the growing influence of the Illinois Plan, and the innumerable attempts sponsored by local, state, and federal bodies. The Report gave explicit and concrete form to what has emerged as a consensus of the many seemingly different approaches to the problem of a new curriculum in mathematics. This conclusion was underlined by the publication of *The Secondary Mathematics Curriculum*, the Report of the Secondary School Curriculum Committee of the National Council of Teachers of Mathematics, in May 1959. While the National Council's recommendations do not agree in every detail with those of the Commission, they do agree in major outline and emphasis.[6]

Julius H. Hlavaty, director of the Commission on Mathematics Program, is on leave from De Witt Clinton High School, New York City, where he is head of the department of mathematics.

[4] Although out of print as pamphlets, these publications have been incorporated into the *Appendices*.

[5] (New York: College Entrance Examination Board, 1957).

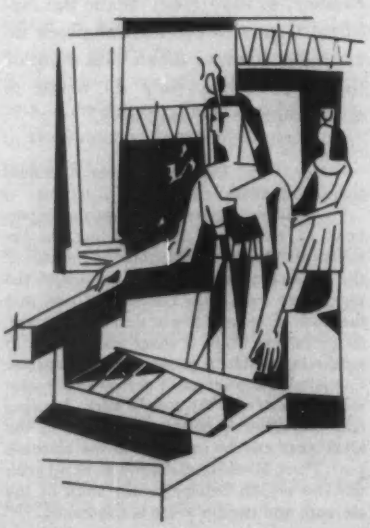
[6] In algebra, the SSCC stresses the importance of insight and understanding, the importance of pattern and structure, the role of the laws of a field, some utilization of the vocabulary and of the concepts of sets, and the study of inequalities as well as equations. In geometry, while it gives more place to synthetic Euclidean geometry than does the Commission's program, it recommends some solid geometry in the year's work. It urges that coordinate geometry be begun in the ninth year and be extended in the eleventh year. There is substantial agreement between the two reports insofar as the work of the eleventh and twelfth years is concerned.

The School Mathematics Study Group (Yale Project) accepted in essence the recommendations of the Commission. In its tremendously productive writing project in the summer of 1959, the SMSG produced sample textbooks for grades 7 through 12. In only one instance—geometry—did it significantly depart from the recommendations of the Commission. In this case it produced an up-dated and relatively rigorous textbook in Euclidean geometry, which however includes a treatment of solid geometry and a unit on coordinate geometry. In all other areas it strove deliberately to implement Commission recommendations.

Possible results

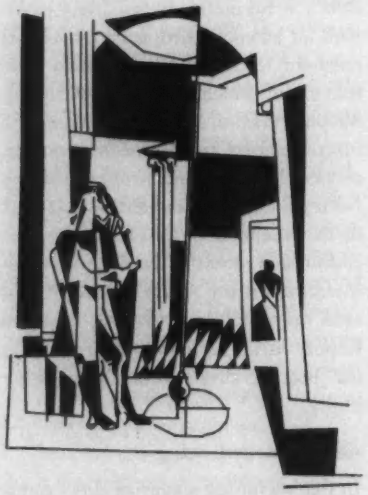
In the present auspicious atmosphere for curricular reform, the Commission's work may prove to be a guide to developments in areas beyond that of its original assignment, the preparation of a program for college preparatory mathematics.

One possibility, if the Commission's program is realized to any significant degree at the secondary level, is that the undergraduate and graduate programs in mathematics at the colleges and universities will be deeply affected. A college mathematics department which grew accustomed to and had some confidence in the traditional definition of requirements (algebra through quadratics, for example), must learn to understand the new requirements and must build its own program based on them. The Committee on the Undergraduate Program of the Mathematical Association of America, is already studying this problem.



Another area which has excited schoolmen in recent years is the problem of providing a challenging program for the more able students. While the Commission's program, in effect, is a minimal program for the talented, it provides, through the variety of optional topics, through the *Appendices*, and through the varied program for the twelfth year a storehouse of possible enrichments. In practice, there is some confusion between the Advanced Placement Program and the various alternatives suggested for the twelfth year. There is room for study, investigation, experimentation, and clarification in the area of the superior student.

A third area of concern in mathematical education is the whole elementary school program. An ideal program in the secondary schools presupposes a sound program in elementary instruction. What should be the contents of such a program and how will it be realized? What are the implications in the area of teacher-training and retraining? Major experimental programs such as the University of Illinois Arithmetic Project and the Greater Cleveland Mathematics Plan have begun, and the School Mathematics Study Group and the National Council of Teachers of Mathematics are readying, a major assault on the problem.



Bearing in mind the American commitment to universal secondary education, even a definition of the college preparatory program is only an approach to the solution of the problems represented by the mathematical education of all American youth. Can the experience and the techniques of the Commission on Mathematics be utilized helpfully to attack this major problem of secondary education?

In assigning the Commission on Mathematics its task, the College Board ventured into an area of delicate questions. In the bad old days the colleges had dictated to the high schools and dominated their curricula. But the Commission was organized to investigate, and if possible, improve a situation of common concern to the high schools and the colleges. Through its representative membership and cooperative working methods, the Commission has attempted to express the best thinking of the mathematical community. Now that the Report has been submitted and warmly received, it is sometimes asked whether the College Board intends to legislate changes in the mathematical curriculum by changing its tests. The answer is "No." The Commission's recommendations are "being taken as a guide for a gradual change in the examinations. This change should extend over a period of years and will proceed as mathematics programs actually being taught in the schools are changed."[7]

[7] Report of the Commission on Mathematics, *Program for college preparatory mathematics*, p. 61.

BY ROBERT L. EBEL

Admissions criteria reconsidered

The school recommendation, if based on adequate information and systematically employed, might be best measure of college capability

The extent to which opportunities for college education should be restricted to selected students is a crucial question of current national policy. By increasing or reducing public subsidy of higher education, and by organized propaganda for or against private educational philanthropy, we can exercise considerable control over these opportunities. Recent college enrollment statistics show a clear trend toward an expansion of opportunities for higher education. In 1939 only 14.3 per cent of our college-age population was enrolled in college. By 1958 the figure had risen to 35.6 per cent. In a democracy dedicated to individual opportunity, and in a culture where machines are reducing the demand for human muscular effort, manual skills, and clerical routines, this expansion makes good sense.

Some of those who argue that we are moving too fast and going too far toward college education for the many claim that only the top 15 per cent of our population is endowed with sufficient ability to profit from college; that our economy cannot support greatly expanded college opportunities; and that it will be impossible to build classrooms and train competent professors fast enough to keep up with the rising tide of applicants. It is not my intention to examine these arguments in detail now. But it may help to set the stage for later comments if I confess that I find little merit or persuasiveness in them. Most college-age Americans can, I believe, profit from appropriate college-level education. This will become even more true if we can succeed in improving the quality of our elementary and secondary education. The most prudent investment our nation and culture can make in its future welfare, it seems to me, would be to appropriate at least one-fourth of our annual economic growth to the improvement of educational opportunities at all levels.

Paradoxically, though, even a rapid expansion in opportunities for higher education is not likely to solve the problem of student selection in the immediate future, for the increase in students applying seems likely to exceed the increase in available opportunities for some time to come. Even in the long run, selection will probably remain a serious problem for individual institutions, each of which has somewhat specialized functions and somewhat unique characteristics. Further, colleges which are quite permissive in accepting first-time applicants and which rely on probation or dismissal to weed out the unsuccessful would welcome selective guidance. Their main concern is that it should reduce the proportion of failures without increasing the proportion of applicants who are wrongly discouraged from attempting college work. It seems reasonable to conclude that the selection of college students is a significant, persistent educational problem.

Three principal criteria have been used for the selection of college students: the satisfactory completion of prerequisite courses or educational programs; scores on approved tests of academic aptitude or achievement; and recommendations from the applicant's high school principal or counselor. Originally the first criterion was used almost exclusively. It began to break down when colleges began to differ sharply from each other in prerequisite courses, and when the comprehensive high school, emerging to serve varied noncollegiate educational needs, began to protest against restriction of its curricular freedom by college regulations. Required courses still are important factors in admission to some colleges, but they no longer provide the main basis for selection.

Aptitude tests most popular

The first tests used widely for selective admission were essay-type achievement tests designed to measure the degree of a student's mastery of well-defined course content. Gradually objective items were introduced as knowledge spread of some of their values, and as skill developed in preparing and using them. But, again, the high schools began to complain that these tests were harmfully restricting their freedom to develop new curricula. To avoid this problem, a test of scholastic aptitude covering a variety of verbal and mathematical skills was introduced. This test has flourished and is now the mainstay of the selection testing program of the College Entrance Examination Board, supplemented by a variety of elective achievement tests. Recent College Board tests have been largely of the objective type, but at its last meeting the Board voted to include one written essay to provide a sample of the student's writing.

For many years, the College Board

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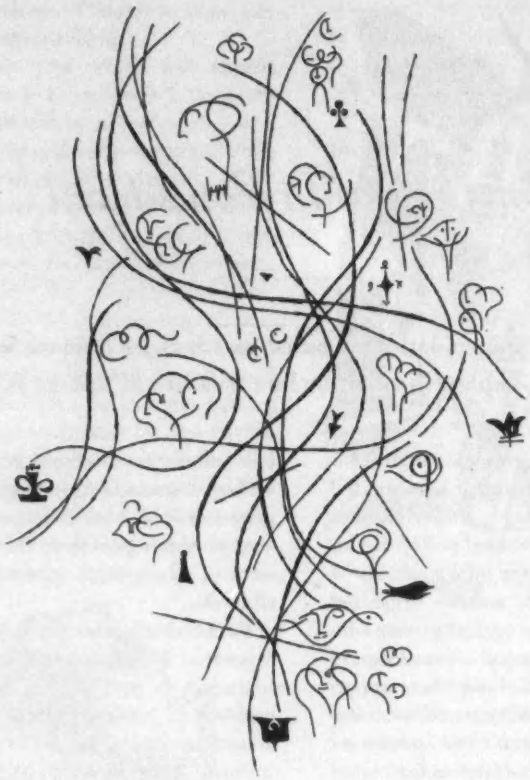
offered the only nation-wide program of testing for the selection of college students. In 1959 a new program called the American College Testing Program was announced. This program is based on a uniform set of four tests of educational development in language, mathematics, science, and social studies. On November 7, 1959, these tests were administered for the first time in 14 states to about 85,000 students.

Thus, there are at least three major types of tests which have been used for college admissions testing—achievement tests, aptitude tests, and tests of developed ability. These tests differ less in the results they yield than in the diverse conceptions they represent of the basis for educational aptitude. But the conceptual differences seem sufficient to warrant some careful examination.

Tests of scholastic aptitude, currently the most popular type, are sometimes regarded as tests of innate capacity for learning. The term "innate capacity" suggests a mental characteristic which is fundamental and changeless, a divinity that shapes our ends, no matter how poverty, inadequate schools, or youthful follies may have rough-hewed them. A test of innate capacity presumably will not handicap the bright youth who grew up on the wrong side of the tracks. In theory, scores on such a test should not be affected appreciably by coaching, or indeed by instruction of any sort. Such a test would place no restrictions upon the secondary school curriculum. Local schools and individual teachers could presumably retain their freedom to teach what they choose, and it would make no difference if they taught it well or badly.

Unfortunately for this particular vision of Utopia, no one has found any very accurate way to measure innate capacity for learning. All of the alleged measures of this capacity are more or less obvious measures of educational achievement. The main differences among them arise from the varying degrees of earnestness with which their authors have attempted to avoid measuring the results of school learning. The kinds of tasks a student is asked to perform in taking an intelligence test are tasks which he has been taught to perform in school, or could



be taught there if the school considered them of sufficient importance. Lacking precise control of educational influences—preschool, in-school, and out-of-school—we cannot tell how much of a student's success on an intelligence test should be attributed to his native mental capacity, and how much to his subsequent learning. To regard scores on such tests as acceptable measures of innate capacity for learning requires assumptions which I find hard to accept.

Even if tests of innate capacity for learning were available, they probably would not provide sufficient information for college admissions and scholarship programs. Innate capacity is not directly relevant to ability to profit from college instruction. Unless this innate capacity has been developed—unless the student has acquired considerable knowledge and numerous abilities—he is unprepared for college no matter how large his undeveloped innate capacity may have been.

The Scholastic Aptitude Test of the College Board does not owe its success, as some suppose, to the fact that it measures innate mental capacity, for it cannot do this precisely and actually does much more than this. It has succeeded because it provides measures of two general areas of achievement—verbal and mathematical—which are basic to most future learning. Because of its generality and scope, it offers few rewards for special coaching and places few restrictions on the teacher of any particular subject. But for these same reasons, it provides few obvious incentives or rewards for excellent teaching or outstanding student achievement toward the mastery of substantive knowledge. Important as general verbal and mathematical skills may be, they do not provide all the evidence that is useful in selecting college students. There is also need to know about a student's command of essential knowledge.

Tests of accumulated knowledge have been less popular than other types in recent years. When knowledge is contrasted with ignorance, it is universally praised. But knowledge is sometimes contrasted with understanding, with wisdom, or with character, and in these contrasts knowledge fares badly. Teachers speak disparagingly of "stuffing the mind with facts." College presidents emphasize the limitations of "mere

knowledge," and stress the contributions that a college education can make to the development of character. Quiz kids, or even adults who show an unusual scope and accuracy in their recall of isolated items of information, are used to illustrate what a good education does *not* consist of. "Scraps of information have nothing to do with culture," Alfred North Whitehead has said; continuing, "A merely well-informed man is the most useless bore on God's earth."[1]

Attacks like these on pedantic, trivial, verbalistic, unassimilated knowledge have been at least partly responsible for general reluctance to use tests of substantive knowledge in college admissions testing programs. But I would suggest that this policy deserves re-examination. Quite obviously, knowledge can be defined so narrowly, or caricatured so grotesquely, that all of the above attacks on it will seem to be well-founded. But knowledge need not be limited to isolated, trivial, informational details, nor to verbal abstractions divorced from reality, nor to rote responses to stereotyped questions. It can be defined broadly enough to include understanding, wisdom, and other approbatory synonyms for effective rational behavior.

Understanding, for example, consists in knowing the relations between items of knowledge. Wisdom consists in knowing how to use the knowledge one possesses. Character, insofar as it is expressed in rational rather than blindly imitative or authoritatively imposed behavior, is based partly on knowledge of the consequences of alternative courses of action. It is in this broader context that one can truly say that knowledge is power, and argue that it represents the primary outcome of the educational process. Quoting Whitehead again, "Education is the acquisition of the art of the utilization of knowledge."[2] I suggest that the "art" Whitehead speaks of is itself essentially knowledge of how best to proceed in a given set of circumstances.

All of us are familiar with learned fools whose minds seem abundantly supplied with knowledge, but who seem unable to use this knowledge to any good purpose. But seldom if ever do we encounter a brilliant ignoramus, one who is capable of highly effective behavior in the absence of substantial relevant knowledge. This suggests that wisdom and knowledge are not really independent, and that the learned fool, for all his academic knowledge, lacks much practical knowledge that is essential to effective behavior.

Diversity limits tests' scope

Apart from unwarranted restrictions on the concept of knowledge, there is another reason why knowledge tests have not been widely used as a basis for college admissions testing. The scope of human knowledge is so broad, and the areas with which different individuals are acquainted are so diverse that it seems difficult to construct any single test, or even any limited battery of tests, which can deal adequately with this abundance and diversity. Our decentralized school system, and pupil-centered teaching procedures tend to foster wide differences in the kind and level of education that different pupils receive. But since we live in the same society at the same period in history, all of us need to know and to be able to do many of the same things. It may be difficult but it is not impossible to define a common core of essential knowledge.

The third type of test used for college admissions testing is the test of developed abilities or mental traits. Proponents of tests of this type refer to them as measures of broad intellectual skills, of basic mental processes, or of habits of thinking. It is said, in their behalf, that they measure what a student is able to do, more or less independently of what he knows. The abilities they purport to measure range from the highly general, such as "ability to think" to the fairly specific, such as "ability to formulate hypotheses."

Insofar as these tests emphasize essential rather than trivial achievement, require the student to show understanding rather than mere recall, and ability to use rather than mere ability to reproduce, they deserve enthusiastic applause. But when they are represented as measures of distinct mental processes or independent intellectual skills, something different from and more important than knowledge, something which can be developed by practice with a wide variety of content materials, they seem to call for critical examination.

The developed abilities approach to the measurement of educational aptitude is based on an allegorically attractive, but experimentally unsubstantiated conception of how the mind functions. All that we have learned concerning the process of learning in rats, monkeys, and men can be explained in terms of the formation and destruction of associations among perceptions, concepts, and ideas. Electronic brains, including primitive models capable of learning or even of self-reproduction, operate essentially on the basis of switches which open or close alternative circuits. To regard the mind as a muscle which is strengthened by exercise on anything, or as a processing organ which can be trained to see relationships, to solve problems, to analyze, to think critically, or to create, irrespective of what kind of problems are given to be solved, what materials to analyze or think critically about, or what product to be created, simply does not accord with what we now know about brain functions. What we do know strongly suggests that educational development consists essentially in the accumulation, integration, and ready-reference-indexing of knowledge. By practice in using knowledge, one acquires command of it. This, it seems to me, is the essence of educational achievement.

Although tests purporting to measure complex mental processes and de-

[1] *The Aims of Education* (New York: New American Library of World Literature, Inc., 1929), p. 13.

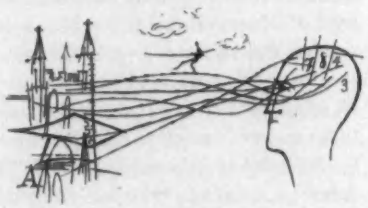
[2] *Ibid*, p. 16.

veloped general abilities have been in use for more than a decade, there is little evidence that they measure something different or more important than a student's command of substantive knowledge. Some of their advocates argue that such evidence is unobtainable in principle, and that the only way to ascertain their superiority is by looking at the tests themselves. But the main job of a test is to yield useful scores from examinees. If the scores from one test are better than those from another, they must at least be reliably different. If the correlation of scores on a superior and an inferior test is as high as that between two forms of the superior test, then it seems to me that all of the claimed superiority is getting lost in the errors of measurement. I do not see how such a test can be said to be superior functionally as a measuring instrument.

A desirable characteristic of a college admissions testing program is that it have a stimulating, constructive influence on the programs of instruction in preparatory schools. Obviously a test of mental capacity could not have this influence. Tests of developed ability because of the generality and indefiniteness of what they are testing, are unlikely to stimulate either teachers or students to unusual efforts to improve. Since the first Sputnik orbited in space, the practices of the Russian schools have received considerable attention. It would be foolish to suggest that we should copy exactly what they are doing. But it would be equally foolish for us to ignore completely their accomplishments, and the means by which these were achieved. Henry Chauncey and others who have visited Russian schools report with some admiration the persistent and generally effective efforts of teachers and students to achieve limited but clearly defined goals in achieving command of substantive knowledge. If we wish our college admissions and scholarship award programs to have the most beneficial effect in the improvement of public education, it would seem wise to emphasize tests in which the nature and, above all, the quality of the teaching done by each teacher makes a direct and obvious difference in the scores the students receive.

What I have been saying about the relative advantages and disadvantages of these three types of tests for the selection of college students—tests of innate capacity for learning, tests of command of substantive knowledge, and tests of developed abilities—may seem heavily loaded with opinion. It may be suggested that there is an easy way of deciding experimentally which type of test should be used for selecting college students. Choose the test which gives the best prediction of college grades. But the apparent simplicity and validity of this approach is deceptive. Hundreds of such studies have been made, but I do not know of a single case in which the superiority of one test has been demonstrated unequivocally.

There are at least three limitations of conventional validity studies in this situation, as I see it. First, the criterion of college grades or grade-point averages is itself unreliable and of quite imperfect validity. Second, sampling errors associated with the obtained validity coefficients tend to be so large, and



precise estimates of those sampling errors so difficult to achieve, that it is almost impossible to make dependable comparisons of the merits of alternative tests. Third, and most important, this approach assumes that a college's current educational program is beyond criticism or improvement. If students who score high on the selection test do poorly in college, the selection test rather than the college program is blamed. I submit that there are better ways of improving the input to our colleges than by striving to improve the prediction of faulty measures of student success in attaining poorly defined and somewhat questionable goals.

There are some who mistrust subjective decisions concerning the nature of the characteristics which determine educability, preferring tests which can be defended on the basis of their high correlation with some ultimate and presumably more objectively given criterion. But the only truly ultimate criterion of success, if indeed there is any such thing, lies hidden from human eyes. And the apparent objectivity of some criteria hides the subjectivity of our decision to use them as criteria. What reason have we to believe that our subjective decision to use more immediate criteria of success, such as wealth, or grades in the freshman year of college, are any more trustworthy than our subjective judgments concerning the elements of a good preparation for higher education?

Even if we are willing to overlook the possible imperfections of our criteria and of our experimental designs, why should we employ an approach which allows the inevitable contingencies affecting success—health, finances, motivation, even romance—to blur and becloud the application of these judgments to the choice of admissions or scholarship tests. Would it not be better to apply the inescapable acts of judgment to the tests directly? And is this not actually what we do? Were not most of the college admissions and scholarship tests in current use designed and built on the basis of rational inductions, deductions, and hypotheses? Empirical procedures surely were used to defend them, and to refine them, but the basic structure seems usually to have been determined, as I think it should have been, by purposeful cogitation rather than by completely objective, judgment-free experimentation. Hence, what I have said about the limitations of the grade criterion and the conventional validity study should not be construed as a complete rejection of such studies. Some of our judgments about what we want to measure, and what we have succeeded in measuring, can be checked empirically. But I am convinced that validity studies should not be the exclusive, or even the primary, basis for test selection. One test or battery of tests should not be chosen over another simply because of a small apparent advantage in predictive validity.

Too much testing?

The introduction of the American College Testing Program, and of the two nation-wide programs of testing for scholarship selection and pre-college guidance, plus the rapidly increasing participation of students in all of these programs, have combined to suggest to some public school officials that

testing might be getting out of control. As a result of joint action by the National Association of Secondary-School Principals, the American Association of School Administrators, and the Council of Chief State School Officers, a committee has been appointed to study the problem. Although each testing program has potential educational values which probably could be realized more effectively than they usually are, there is obvious wisdom in eliminating wasteful duplication of testing. The initiative of school officials in seeking a sound solution to the problem is highly commendable. It will be well for them to remember, however, that they, like the testing agencies, are useful primarily as servants, not as masters, of education. The broad public interest in more effective education, rather than the special interest of any organization or agency of education, whether it be an educational testing service or an association of school administrators, should be the ultimate standard for evaluating the influence of wide-scale testing programs.

Computer versus counselor

Specialists in testing have been protesting for years over the inadequate use of test information in the typical school. Some of them are persuaded that if the schools could be induced, and helped, to make full use of information on the cumulative records kept by most schools, the need for special wide-scale college admissions testing programs could be greatly reduced. The availability of integrated test batteries, and the versatility, capacity, and speed of modern electronic computers, give added strength to this persuasion.

I must confess that I have been slower than some of my colleagues to see the feasibility of this plan, and more inclined than they to see problems that may arise. Will sufficient schools adopt the reasonably uniform set of tests and records required by the plan? Can we get a computer big and fast and versatile enough to cope with the complex data and computations required, and if so, can we afford to program it properly? Perhaps an adequately informed high school principal or guidance counselor could beat an electronic computer hands down in analyzing a given student's high school record and forecasting his probability of success in a given college. Perhaps I am wrong but it would be interesting and possible, I think, to find out.

Let me explain more fully what I mean by "an adequately informed high school principal or guidance counselor." Suppose a reasonably self-contained group of admitting colleges and candidate-supplying high schools form a college admissions conference. Suppose the colleges agree to base their admission decisions mainly on the high school principal's specific prediction of an applicant's probable achievement and adjustment if admitted to a particular college. The high school principal's recommendation might consist of his answers to these three questions: (1) In which tenth of his class is this student likely to rank after one year in college? (2) Is this student likely to be one of the 10 per cent of his class who become recognized as outstanding leaders on campus before graduation? (3) Is this student likely to be one of the 5 per cent in his class who have most difficulty in adjusting to college because of health, emotional problems, or personal characteristics?

Let the colleges assume responsibility for reporting their experience with admitted students back to the high school in these same concise terms. Suppose further that a central clearinghouse is set up by the conference to record both the predictions and the experience and to summarize the accuracy of predictions from each participating high school and the accuracy of predictions to each participating college. By this means the schools would come to feel real responsibility for the accuracy of their predictions, and schools or colleges presenting special problems of inaccurate prediction could be indentified. The principals of small high schools sending few students to college might wish to join forces with similar schools nearby to gain the advantage of pooled experience.

If such a plan were adopted, some high school principals might find themselves seriously lacking, at first, in information on the levels of ability required at various colleges, and the general level of ability of their own students in relation to those from other high schools. They might welcome or even demand a testing program which would provide the benchmarks they need. But under this plan the test scores would not replace the principal's recommendation. They would rather be guides for the principal to use in arriving at his recommendations to colleges.

I see values other than improved accuracy of prediction and release from the pressures of imposed testing in this plan. It would provide occasions and channels for increased and improved communication between schools and colleges. It should lead to mutual understanding and improved articulation.

It may be that my basic hypothesis is false, and that a principal's forecasts would not be better, or as good, as those computed by machine. It may be that high school principals would be reluctant to assume responsibility for specific, accurate predictions of probable college success; for opening college doors to some students and closing them to others. If so, they should recognize that other persons or agencies who are willing to accept responsibility will take control of the assessment of student capabilities. They should then welcome external admissions testing programs, and not simply tolerate such programs. But my perceptions of the complexity of the judgments required in predicting college success in various institutions lead me to believe that the most accurate predictions in the foreseeable future are likely to come from good men, not from complex computers. I hope this hypothesis can soon be tested.

BY JONATHAN PEARSON, III

"Walter will never be a dope fiend...."

Some of the most interesting prose written during the past few months has come, not from the pens of professional writers but from people who are recommending young men for college. Our mail in the Union College admissions office becomes more and more fascinating as we receive reports on candidates for the Class of 1964 from guidance counselors, principals, headmasters, directors of studies, and from our far-flung alumni representatives.

Perhaps the gem of the crop was contributed by an assistant headmaster at a country day school. "James Warburton M.," he writes, "is the son of a Union alumnus of the same name. He has been with us through seven long years of ineptitude and frustration. We are anxious to pass him along to another institution but, alas, doubt that it should be yours."

Writing several dozen recommendations must tax the resources of even the best guidance counselor, but it does develop a rich source of adjectives, many of which fall into the category of "damning with faint praise," but which, nevertheless, titillate the admissions officer. Witness: "From an academic point of view, Tony's liability is a stubborn blindness to his own limitations. This is balanced, perhaps more than balanced, by an extraordinarily persistent determination to succeed. He is an overproducer by sheer force of character and I think it safe to say he will be successful in college for the same reasons that have enabled him to plow through his challenging courses here with aplomb and, occasionally, distinction. We recommend him as a boy most likely to do a better job next year!"

An alumni interviewer reports that "Albert would not be an outstanding asset to us, based upon past performance. Neither would he hurt our reputation. He is neither liked nor popular with his fellow students. This boy has been involved in more than the average number of schoolboy scrapes. Nothing seriously objectionable, however, and if he can handle the freedom of college, I believe he has the acumen to make the grade. If you need him, take him, but don't expect too much. His father's a Dartmouth man."

High school principals know it is often best to avoid making an outright prediction of academic success in college. They prefer to leave the guesswork to the admissions committee, as in this case: "Walter is not an outstanding student, but his family background is exceptional and his character impeccable. I can assure you that he will never be a dope fiend or a bar fly."

It is unlikely that the Committee will have much trouble with the boy of whom it is written: "Roger appears personable and alert—but he isn't..."

Parents would be surprised how many times they figure in a recommendation of their child for college studies. For instance, a counselor wrote us last year that "When Charles gets away from home where everything is done for him, he will probably be motivated to compete academically." Our faculty committee demanded three readings of this recommendation and finally decided that it was not the expectation of things to be "done for him" in college, but the handicap of things "done for him" at home which figured in this lad's future.

And how many times do college admissions officers read variations of this recommendation involving parents: "Alan is a pleasant, polite, thoughtful boy who, in the opinion of his masters, has about average ability and good work habits. His father has pressed him continually to produce outstanding grades, something of which he is not capable. The result has been to increase Alan's uncertainty and nervousness, but, latterly, he has begun to grow up and be himself, to be more self-reliant and stable and less emotional."

Less frequent, but nonetheless telling, is the recommendation: "Union would be good for this boy. His mother has remarried and now resides in Palm Beach." (Union is still in Schenectady.)

Some candidates don't realize they are being watched. In this case, an alumnus was doing the spying. "Joe's original choices were Yale, Princeton, Dartmouth, and Wesleyan," our alumnus reported. "I was consulted and suggested some southern or western colleges. At no time did I mention Union, but my friendly attitude must have given the family hope. Joe has not shown evidence of the drive needed to carry a boy through Union. He lacks imagination and curiosity and his outside interests all center around tennis, which he plays fairly well. His unfavorable characteristics are pretty negative and present a rather dull boy."

In contrast, we have Robert, whom an alumnus describes as "eager, direct, cheerful, and friendly. Quick and alert in his responses to my questions, he spoke positively and confidently, yet was not immodest or overly talkative. Despite the tendency of his mother to

Jonathan Pearson, III, is director of admissions at Union College. The above article is adapted from one appearing in the January 1960 issue of the *Union College Review*.

want to prompt him, he struck me as a boy who did his own thinking."

Mother sometimes doesn't know she's being watched either! She often figures in an alumnus' report. "Mrs. S. is a vigorous woman—simple, straightforward, sensible, and unintellectual. She and her husband are proud of their children and anxious to do what is best for them."

One bit of information came close to causing a permanent rift in our admissions committee some years back. A guidance counselor warned us that "it is worth noting that this boy has been caught three times smoking on the school bus." The boy was rejected by one vote and, afterwards, the dean noted that smoking members of the committee had been unanimous in their disapproval of the candidate.

Just about the sourest sketch we have ever received concerned a boy who turned out to be a model citizen at Union. I still wonder what prompted us to accept him after we had read "Charles remains on the whole quite good-natured, even under severest discipline—and he has had plenty of that. He is a boy of careless dress and defiant attitude who has real ability, imagination, and insight. However, should he continue in his present attitude, he would not succeed in college. He prefers the notoriety of low grades and faculty criticism. We have started to mold this boy, but have made only a modest beginning. We might add that the clay is of good quality."

Charles "got in" and did a good job, but another candidate didn't. "I have heard," wrote the latter's principal, "that this boy is related to a former president of your college. Would this make any difference? For his sake, I hope so...."

We weren't certain we could trust the next boy at the president's reception, so asked him to stay away. His school had said "...has a magnificent disdain for technical accuracy. Seems self-important, even arrogant. I have come increasingly to mistrust him and to question his sense of values. He is utterly materialistic."

Headmasters must have an historical sense, as indicated by this endorsement of an applicant. "A fine gentleman and an excellent citizen. Loyal and cooperative. Wants a fast-moving and challenging program at a small college. We realize that things were too fast-moving and too challenging for our last three delegates to Union, but feel more confident in this one. He has 'guts' and has proved it in the classroom and on the playing field. He is mature and stable and he carries our heartiest recommendation."

"We have started to mold this boy, but have made only a modest beginning."

Some recommendations say a lot, but solve no problems for admissions officers. To wit: "...an interesting, often amusing, frequently exasperating character. He is jug-eared and his speech is a caricature of the state of New Hampshire drawl. Has fair ability, seldom used. Seems to have matured more slowly than his classmates. He is shrewd rather than deep. If Jerry had as much organization and self-discipline and maturity as he has independence and versatility, he would indeed be a strong college candidate. He is recommended with the understanding that for the next year or so there exists a strong element of risk."

The press clippings of a young man who made the "All Metropolitan Football Team" in one of the largest eastern cities didn't overwhelm one of our alumni interviewers. "This kid probably couldn't play in our league, despite his reputation," he reported. "He weighs less than 140 and is living proof of how ludicrous some of the sportswriter polls can get. Even if he did make the freshman team, I doubt he'd be around at Thanksgiving. He ranks in the bottom quarter of a very average class and his school authorities say he cannot meet Union's standards."

Often, the recommendations from high schools contain a plaintive note, such as, "From his record, you will see that Frank has fine ability, but, because of his laziness, has not achieved anywhere near his potential. I don't think you'll want him and have told him so. Won't you please, after reading this, help me out. If I am out on a limb, I don't want it cut off behind me."

And, here's an alumni representative out on the same limb. "Bruce

seems to have done little reading and what he has done has been recent, and more with the idea of impressing an interviewer than because he's really interested. He's quite verbose and doesn't always make sense. I may be out of touch with the norms of the younger generation, but I feel reasonably certain that Bruce is far below average in grammar, English usage, and social poise. His 'Brooklynese' might sound all right on television and, besides, he's reasonably attractive in a swarthy way. As I say, I may not know what standards the youth are supposed to meet these days, but I cannot believe Bruce will look very good to you. Let me know if he does, as I've already told his chemistry teacher he probably won't be admitted."

The local pastor is often regarded as an easy mark, a fellow who can be counted upon to say nice things about a college candidate. Here's a case where a clergyman (a Union graduate) obviously did not respond as expected. "This is a neat, clean, responsive boy, extroverted and alert. He has imagination and curiosity, but they are limited, I must tell you, to what he feels will achieve his particular selfish goals. He is not popular in the sense of everyone liking him, as he has certain ideas about success that lead him to cultivate only those who will put him on top. He ignores and even shows cruelty to those who cannot advance him. With the above reservations, I can recommend him to you as a very bright boy for whom a good college can open horizons that he has not seen or understood before."

Lawyers are an even poorer bet, sometimes, for the boy seeking a recommendation to college. "I am not overly impressed by David," writes the family attorney. "His appearance and attitude are not very distinguished and

"Roger appears alert—but he isn't."

"Albert would not be an asset..."

he has scant interest in what goes on in this community. I inquired as to his reasons for preferring Union and he frankly stated he thought he'd have less difficulty attaining good grades there than at R.P.I. or M.I.T. I would assume you have more than a sufficient number of applicants who have a better academic record than David and also who have some semblance of eagerness for intellectual and extracurricular adventure."

The following boy made a good impression on an alumnus and for a good reason. "Walter appears to me to have average academic preparation, above-average aptitude and high motivation, which is traceable to an excellent home environment. He wants to go to Union and I certainly hope you will make it possible. I do not think I am unduly influenced in recommending him by the fact that his father is our outstanding consultant in electrical engineering here..."

The foregoing excerpts should be fascinating for anyone with the slightest interest in people. The admissions officer needs a good pair of eyes to read all of these letters and he must also cultivate an ability to read between the lines—and behind them to the individual who is writing them.

It may come as a surprise to some writers of recommendations that their words are ever read at all. I am thinking in this connection of the man who one year sent us transcripts on 17 candidates, each of whom he described as "a very nice boy." This man didn't hurt anyone; neither did he give any help—and perhaps this was his intention. Probably he wasn't as unfair as some administrators in parochial high schools who consistently refuse to write recommendations or sign transcripts for students intent on going to nonsectarian colleges; we cannot consider admitting students on such a basis.

Another type of counselor who upsets the already precarious digestive systems of admissions officers is the "arm and hammer" operator. "This boy may not look good on paper, but he's a challenge I hope you'll have the courage to accept," he tells us. His close relative is the man who goes right out to the end of the limb in recommending with enthusiasm a candidate who has failed to meet the school's "college-recommending grade" in two-thirds of his courses. Contradictions such as this never fail to astound our admissions committee, and we are hard-pressed to get the train back on the track after a discussion of such a case.

Since I may not have the floor again, I would like to ask for more courage and less double talk from secondary school administrators when they are writing out candidate reports. I can ask for it, but I know that there are several good reasons why we college admissions officers may not get it. I don't envy the lot of the person in a public high school who is held responsible for describing and recommending weak candidates for college.

Apropos of this I will conclude with a final anecdote from our bottomless file. The vice principal of a large high school plucked at my elbow as I was wending my way to a seat at a convention several years ago. We were well acquainted, as he sent about a dozen candidates to us every year. "What possessed you to take that Watkins kid last spring and turn down Ronald McQueen?" he challenged.

I groped my way to my seat without admitting I didn't recall either boy, but I dove into the files upon my return to campus and dredged up Watkins and McQueen. There was Watkins: "A wholesome, cooperative, contributing boy from a nice family background. All his teachers think well of him and we believe he has a bright future." And there was McQueen, the one we turned down: "A steady, plodding boy who does his work. Should succeed in college." I telephoned the vice principal and read him my discoveries.

"Well," he retorted, "we didn't recommend that you *admit* Watkins, did we?"

BY EDWARD T. WILCOX

Advanced placement at Harvard

An explanation and evaluation of one college's policies and experiences in granting advanced placement and credit

Advanced placement can hardly be regarded as a new idea. In nearly every college in the country procedures have existed by which students could be tested and placed into courses at a level appropriate to their ability and training. Placement by interview, by test, by local agreements between schools and colleges; anticipatory accreditation; place-out and exemption examinations; equivalency tests—a whole gamut of practices like these have kept college placement officers busy and registrars confused in most institutions for many years.

But the Advanced Placement Program of the College Entrance Examination Board does involve a relatively new idea. The novelty lies not only in the wide-scale effort to teach college-level courses in secondary school, but also in the implicit agreement among a wide variety of colleges that a consensus can be reached about the substance and approach necessary in "college-level" work, and more importantly that a consensus exists, in theory at least, about accepting such work for college placement and credit.

When the Advanced Placement Program was inaugurated there was considerably more unanimity about the idea than there was about the procedures colleges would use to grant such placement or credit. With considerable astuteness, and a realistic sense of how college faculties might react to any invasion of their prerogatives, the College Board moved with great caution and "suggested" what might be done, hastening to add that colleges would be likely to do just as they pleased.

During the early years of the Program few colleges had to face the issue. There were not many students who presented Advanced Placement Examinations, and those who did could be handled on an individual basis. There was little need for full faculty or department meetings to debate policy issues connected with the new program. This, however, is changing. About 9,000 students will take one or more of the examinations this May and will arrive in September at many different colleges. These colleges will soon have enough candidates so that some policy will inevitably have to emerge.

In 1954 the Harvard faculty initiated its Program of Advanced Standing. One of the provisions of the legislation voiced approval of the advanced placement principle: "The objective shall be to place entering students in the most advanced courses for which they are qualified by their secondary school achievements." Characteristically this legislation said very little about the criteria to be used.

It was not very long, however, before explicit criteria had to be found. The program grew with astonishing rapidity. The chart below gives a quick picture of the sheer growth in numbers of advanced placement candidates at Harvard between 1955 and 1959.

When 40 per cent of an entering class present scores from one or more Advanced Placement Examinations, it becomes clear that broad policy lines have to be laid down and some consistent pattern established.

The policies formulated during the early years of growth developed within the highly decentralized setting of a university dedicated to the principle of faculty and departmental autonomy. The advanced placement procedures used at Harvard, now relatively automatic ones, were agreed upon by the departments after considerable discussion. They are reviewed annually.

As other colleges face increasing numbers, the Office of Advanced Standing at Harvard receives numerous inquiries from faculty committees developing policies for their own institutions. We are asked for an account of the principles under which advanced placement is given at Harvard, an explanation of our reasons for handling it as we do, a report on the success of the procedures at this point. The letter below is a response to an inquiry of this sort from the dean of a large midwestern university.

In presenting these ideas to a wider audience I have left the letter in the form it was originally—an informal communication with a friend. This seemed better than writing an article or attempting a pronouncement which, in expository form, might suggest that the policies outlined were recommend-

Year	*Schools sending candidates*	*Advanced placement candidates*	*Examination scores submitted*	*Number of awards granted*	*Students eligible for sophomore standing*
1955	16	81	130	41	0
1959	149	449	1,396	712	97

ed as the only appropriate ones, or even the best.

There is probably no single formula that would be generally applicable in institutions as widely diverse as American colleges. Policies have to develop within the context of particular institutions and particular curricular commitments. Problems in a large university differ from those in a small college. Each faculty deals differently with undergraduate programs, with specialization in the department, and with general education in the program as a whole. "First-year" courses vary widely. This suggests that it would be difficult indeed to find any uniform way of dealing with advanced placement.

Here, however, is what is being done at one college, and the reasons for doing it.

"Dear Dean:

The questions you raised are central and critical; it's hard to write succinctly about them. Complete answers would require a document summing up the history and development of advanced placement policy at Harvard. Let me outline instead our present policies, together with the reasons for their adoption.

In sum and substance we now accept automatically in most fields a grade of 3 or better on the College Board Advanced Placement Examination.[1] We do this without further ratification: the departments do not reread examinations; the boy does not go for a departmental interview; we pay no attention to the school's recommendation; we do not question whether the student intends to continue in the field; we do not award post facto credit on the basis of a grade received in some advanced course that a student might or must take; we do not ask that the advanced placement course parallel exactly a course given at Harvard; we use no additional indices, aptitude scores, achievement scores, IQ, school rating; nor do we call for any review—clinical, psychological, or intellectual—of the simple fact that a student has scored a 3 or better on the examination.

There it is. There are minor exceptions: in French literature and in chemistry, the department requires a score of 4 or 5 on the Advanced Placement Examination; in physics, the student must have completed a year of calculus.

This is the core of our policy, and it is now established in virtually every field in which the College Board offers Advanced Placement Examinations.

The fraudulence of examinationsship

Shortcomings acknowledged

I believe we know most of the disadvantages in this. Quite aside from the apparent coldness and impersonality of the operation, this policy clearly gathers unto it all the disadvantages of a rigid examination system of education. Almost anything that can be said about European national examinations can be said about Harvard's policy. Anyone giving a moment's responsible thought to the problem would recognize how poor an absolute index one examination, hastily corrected in the context of 10,000, can be. In effect we have no way to distinguish between real competence and shots in the dark, between an extraordinary preparation that doesn't show under examination pressure and the fraudulence of examinationsmanship.

Yet the college has had to live with this in every large lecture course, where anonymous students pass or fail on the basis of a final examination. In one way or another each of us has been living for years with the disadvantages inherent in the written final examination. I find it hard to expect of advanced placement more reliability than we are prepared to expect of ourselves.

Perhaps the greatest weakness in the policy I've described is that it fails to utilize or to encourage written communication between the school and college teacher. The school recommendation, which could become an admirable device for direct exchange between a boy's secondary school teacher and his future college professor, has been eliminated in favor of a central committee of fallible readers.

I say all this only to illustrate at the beginning that as our policy has developed, we have been aware of its shortcomings. We have chosen to accept those shortcomings largely because any other policy, as we see it, would have greater disadvantages. Here, in my estimation, are the basic reasons for establishing a policy of automatic acceptance of central reading.

In the first place, everything follows from a basic premise that the Advanced Placement Program is, in fact, teaching college-level courses. The college has to take this, if you will, as a matter of faith rather than works, hoping that the dogma will demonstrate its validity later. If this first premise is accepted, then the policy I've described is sustained by parallels within the regular course structure of the college.

For example, no professor teaching a middle-group course would think of re-examining the sophomores who come to him from the freshman courses in the college. It is not necessary to get an honor grade in a sophomore course before receiving credit retroactively for a freshman offering; a student does not have to take a second-year English course in order to get credit for the first-year English course, and so on. The policy decisions with respect to college courses taken in secondary school therefore stem directly from parallel policies with respect to courses taken in the college itself.

The second rationale for automatic acceptance is less theoretical in character but, at this stage of developments

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Edward T. Wilcox is director of the program of advanced standing at Harvard College.

[1] [Grades are assigned on a five-point college-level scale as follows: 5 (highest honors), 4 (honors), 3 (creditable), 2 (pass), and 1 (fail)—ed.]

at Harvard, is clearly a major consideration. We accept grades of 3 and above automatically out of sheer administrative expediency. I needn't point out that we could no longer run the Advanced Placement Program if departments were expected to reread the examinations that came to us. This year, for example, nearly 1,400 examinations are stacked in my office. There are better reasons for establishing the policy, but at this stage of the game the practical considerations are overpowering. We couldn't change even if we wanted to.

But even in the beginning, when the number of examinations was not a major problem, our departments began to agree on the value of this kind of automatic acceptance. I think Harvard has tended to reap a disproportionate share of the fruits of this program because this policy was established. In the long run both teachers and students feel more secure—and more fairly treated—when they are dealing with a college in which they can anticipate results. If students get a qualifying grade, they can expect advanced placement at Harvard as a matter of course. Regardless of subtle, parochial arguments in its favor, there is something sticky and confusing about a college policy that encourages a student to spend a hard year in an advanced placement course, challenges him to get a qualifying grade on the appropriate Advanced Placement Examination, and then points out that he still must face a kind of placement by ambush, a mysterious re-examination by the college. The essential difference is between a passive advanced placement policy that expresses itself in the benignly parental encouragement, "We'll see, son," and an active policy that states unequivocally, "Do the job: this is what you'll receive."

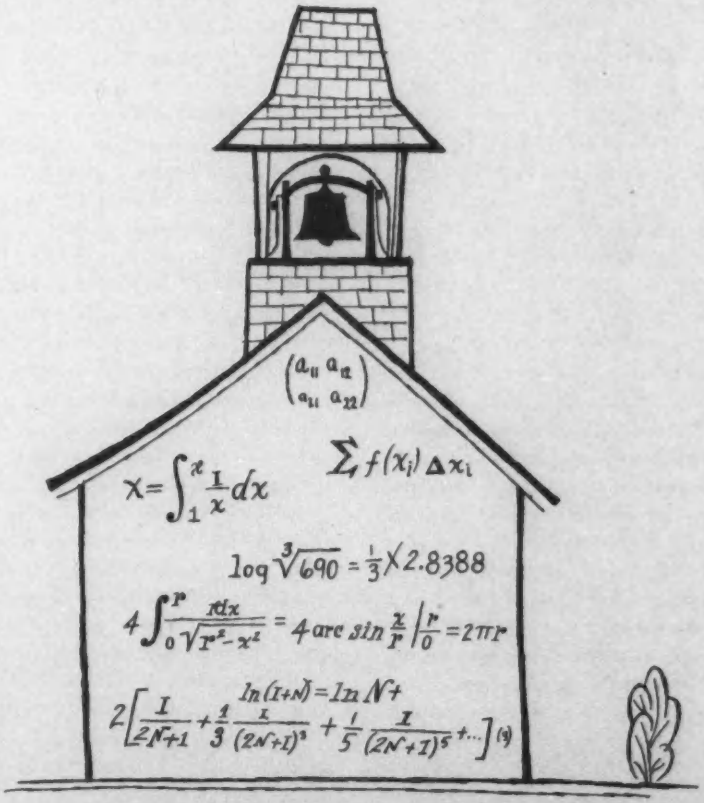
I've mentioned the dangers of a "state examination" system. Even so, I would argue that the greater the heterodoxy of individual departments in individual colleges, the less likely it is that the Advanced Placement Program will flourish as a pooled set of standards that all colleges can use. Beyond its sheer inconvenience, a policy of departmental review tends to fragment the basis for "substantial equivalent" from one college to another and makes it virtually impossible for any school that sends its senior class to as many as 100 or 200 different colleges to organize any kind of advanced placement program. It's clear that if, say, our department of history had local requirements above and beyond the Advanced Placement Examination in American or European History, a certain number of schools that customarily send large delegations to Harvard would soon be teaching history courses aimed not at a national standard but rather at the Harvard standard.

This in turn would mean that students trained in one of these schools and headed for your university would show up with specialized training, serviceable at Harvard but not very useful to your department. By virtue of the same fact, any strong departmental departure from the standards of the Advanced Placement Program's central reading of history examinations by your history department would clearly start to control advanced placement in your state. This would affect in turn the training of those students who happened to come to Harvard, and ultimately penalize individual students for differences of professional opinion among their elders.

In the face of this possibility, I've argued strongly to our departments that they should accept the central reading of the Advanced Placement Examinations as it is, even when it fails to fulfill some of the requirements the department itself would like to see introduced. My feeling is that if they object to the syllabus or to the standards of grading, it's better to try to change those things at a national level rather than boring from within, as it were, by setting up local requirements beyond a simple acceptance of the College Board grade as such. The value of this program, when it's working right, is that any student in any school can prepare in an Advanced Placement course with reasonable assurance that he is meeting a standard that will be acceptable at any college to which he happens to be admitted.

Let me simply list a few more of the reasons, as I see them, for our policy.

1. The teacher's recommendation form, as I have suggested above, has great value—but value primarily in terms of communication rather than as


$\begin{pmatrix} a_{11} & a_{12} \\ a_{11} & a_{22} \end{pmatrix}$
$\sum_i f(x_i)\,\Delta x_i$
$x = \int_1^x \frac{1}{x}\,dx$
$\log \sqrt[3]{690} = \frac{1}{3} \times 2.8388$
$4\int_0^r \frac{x\,dx}{\sqrt{r^2 - x^2}} = 4 \arcsin \frac{x}{r} \Big|_0^r = 2\pi r$
$\ln(1+N) = \ln N +$
$2\left[\frac{1}{2N+1} + \frac{1}{3}\frac{1}{(2N+1)^3} + \frac{1}{5}\frac{1}{(2N+1)^5} + \dots\right]$

The wide-scale effort to teach college-level courses in the schools

Grades of advanced placement students taking sequent advanced courses during first year at Harvard (1954-1958)

Number of students in each grade category

	A	*B*	*C*	*D*	*E*	*Total*
Biology	4	14	9	1	0	28
Chemistry	13	22	17	1	2	55
English	18	48	19	1	0	86
French	11	6	2	0	0	19
German	2	2	2	0	0	6
History	13	87	29	2	0	131
Latin	4	3	1	0	0	8
Mathematics	145	125	104	20	9	403
Physics	8	6	10	2	0	26
Spanish	1	5	0	1	0	7
Music	10	7	1	2	0	20
Greek	13	5	5	1	1	25
Total (number)	238	327	198	31	12	806
Total (per cent)	29.6%	40.5%	24.6%	3.8%	1.5%	100%

a device for certification. My experience has been that the grade a student gets and his recommendation from the school are so closely correlated that the recommendation simply increases paper work without any notable increase in validity. When the recommendations in a given school fail to correlate, I suspect the recommendation rather than the examination is likely to be in error. On one hand some teachers are overimpressed with their students and confuse strength of moral character or sheer diligence with solid performance. On the other hand there are a good many teachers who have been excessively conservative in their recommendations. They regard the recommendation as a formal statement of their professional standards, and the rascals would rather see 10 students lose advanced placement than run the danger that one student might turn out poorly in college and therewith blacken their escutcheons.

Brilliance without beauty

And there are students who are simply brighter than they appear to be. There are students in whom brilliance and personal charm are inversely correlated. A "recommendation" evokes comments on personality as often as performance, particularly for teachers accustomed to calling the attention of admissions officers to their favored students in terms of potentiality, charm, grace, beauty of soul. Some of our most unprepossessing and truculent students have a disconcerting way of showing up with A's. I hesitate to take an unknown teacher's recommendation against a substantial examination performance by the student himself.

2. I have never felt that aptitude scores were pertinent to the problem of advanced placement credit. We find that advanced placement here is not a measure of student aptitude, except insofar as the selection process in the high school tends to pick the ablest students for advanced placement courses. Advanced placement defines students lucky or rich enough to go to a school that offers an advanced placement course. The brightest boy in the world from East Snowshoe, with aptitude and achievement scores of 800 across the board, may still end up with no advanced placement in mathematics simply because he has not been in an area where calculus was being taught.

3. We gave up, quite early in the game, trying to make sure that a student had taken an "advanced placement course." We ended up with the definition, at least consistent with the rest of our policy, that an advanced placement course was that educational process by which a student was sufficiently trained to be able to get a 3 or better on an Advanced Placement Examination. What one school calls an "honors" course is, in another school, the remedial section. At one eastern school the regular senior mathematics course is now calculus, and covers all of the material in the *Advanced Placement Program Syllabus*[2] and in some sections a good deal more. If we stuck to a rigid definition, we'd have to say (as the school rather smugly insists) that these students were simply taking the "regular" senior course and were not in an honors or "advanced placement" course. It's obvious that there's a good deal of difference between this kind of work and what some other school might call an "advanced placement course in mathematics"—which I've seen turn out to be trigonometry with a few weeks of analytical geometry and a smattering of calculus. In some small schools the advanced placement course becomes a tutorial session which an interested teacher is willing to conduct with one bright pupil. It is obviously impossible as well as undesirable to maintain any single standard for the course. We have simply reverted to the definition I've already given, and measure the course by its product.

The ultimate ratification of the Advanced Placement Program lies in the performance of these students in middle-group courses. The table I am including on this page makes it clear, at this point at least, that our policy has been a sound one. I don't feel we have dangerously overplaced students as a result of this rather naked acceptance of the College Board grades. As the numbers of students taking Advanced Placement Examinations continue to grow, it may very well be that some kind of entropy will start taking place in the grading procedures. I suppose this in turn will be reflected in our results. Exactly what we'll do at that point, I don't know. I'm sure in any case that the solution is not to require a higher grade (that is, a 4 or a 5); my guess is that this would relocate the standards of the readers and start a kind of inflationary spiral in the grading process.

Diligence confused with performance

[2] [New edition, to be published in May, will be called *Advanced Placement Program: Course Descriptions*.—ed.]

BY CHARLES C. COLE, JR.

Creating a climate of quality

Establishing a campus climate conducive to improved standards requires participation by administration, faculty, and students

There is about every campus a certain atmosphere, a certain climate. There is an image or a number of images of each institution of higher learning held by those who work there; by its students, alumni, and friends; and by the public at large.

The profile of a college or university is a composite of all the many impressions created by those who are part of the campus community and who, in one way or another, help to shape its character and influence its destiny.

The environment of an institution may be the result of such diverse factors as the type of administrative decisions made by its president, the mood or morale of its faculty, the conduct and dress of the student body, the emphasis and scope of its curriculum, the range of activities and interests of its alumni.

The physical setting of a campus plays its part in helping to create the atmosphere of an institution. But the buildings themselves and their distribution in a definable area are only incidental to, although sometimes symbolic of, the tone or climate of a college.

It is evident that during the 1960's, increased numbers of college-age youth will be seeking higher education, a greater emphasis will be placed on securing the fullest development of the abilities of the population, a continued increase in productivity will characterize our economy. It is to be expected that institutions of higher learning will take advantage of such a time to raise standards, to institute or improve quality programs and to strive for excellence in curriculum and educational services.

This effort of upgrading which currently is characteristic of many institutions is likely to take on major proportions. Colleges and universities are not static, although many of them are considered behind the times. They cannot stand still. They either improve or retrogress over the years. As Frank H. Bowles, president of the College Entrance Examination Board, recently put it, "Our choices in American education are not between large institutions and small, nor urban versus rural, nor public versus private...the choice is, and must always be, between excellence and mediocrity."[1] Striving for excellence and creating an atmosphere conducive to its search, therefore, will continue to be of concern to faculties and administrations.

This is not the place to dwell at length on what constitutes quality programs, nor do I believe we must concern ourselves unduly with the question of the extent to which quality programs in higher education influence those who partake of them either in terms of their training, their learning, or their sense of values.

Nevertheless, before considering ways in which to encourage a climate conducive to quality programs, let me suggest five areas in which improvement is needed at most institutions. The curriculum needs revision and enrichment. Faculty standards and expectations must be raised. There must be improvement in the quality and methods of teaching. Student personnel services must be made more effective. Finally, at some institutions the facilities: classrooms, libraries, and laboratories—the tools of learning—must be made more adequate. Although there are obvious differences in methods for achieving progress in the different areas, there is a similarity in the means to be employed for creating a climate that encourages a search for excellence.

[1] "The Essence of Guidance," *College and University*, vol. 35, no. 2, p. 148.

"The common life" on campus

Turning our attention to the problem of changing a campus climate for the better, let us consider first the individuals involved. A campus community consists of those members who are more or less permanent, namely, the administration and faculty on tenure, and those who are temporary, the students and those members of the teaching staff on annual appointment. Efforts to improve the campus environment must affect all segments of the campus population.

In his book, *The College Influence on Student Character*, Edward D. Eddy, Jr., has declared, "The college which seeks to raise the level begins, we believe, by eliciting the support of all those who are in part responsible for the common life. This includes the governing body of trustees or regents, the administrative officers, the members of the faculty, and appropriate student groups, as well as individual students. Unless a majority of the persons in each of these categories assents to the new emphasis, there will result unfortunate divisive elements which

Charles C. Cole, Jr., is dean of Lafayette College.

prevent the new level from becoming accepted fully."[2]

Each segment of the campus community has a role to play. Fortunate is the institution where the president is able to find time from money raising, public relations, and staff problems to provide continuous, effective direction in this regard. College deans, those much maligned members of the campus community, must exercise educational leadership and interpret institutional policies which relate to improving the academic program. The faculty, under leadership, must be the main task force in bringing about a spirit that encourages excellence in teaching and scholarship.

What are the methods of change? Here we may speak in terms of leadership from above, leadership from below, or leadership from outside the immediate family of the institution, such as that supplied by consultants.

Let me illustrate by referring to the part that can be played by administrators. There are many administrative devices which can help encourage a faculty to improve the curriculum, or the students to work harder.

One very important ingredient in the mechanics of change is, of course, money. Providing financial support for a project can help insure its success. A special fund for the honors program, awards to outstanding teachers, and financial support for curricular experimentation can indicate that an administration is paying more than lip service to the ideal of superior education. Making funds available to assist faculty members in undertaking research or in improving their teaching indicates that the top echelons place high priority on professional improvement. Programs such as the National Science Foundation Undergraduate Research Grants, which support promising undergraduates engaging in scientific research under faculty supervision, provide badly needed recognition for the serious, talented student.

There are other methods as potent as money. The policies with respect to employing and promoting the staff have a bearing on the subject. The reduction of teaching loads so that faculty members may devote extra time and energy to curricular improvements is a useful practice employed by a number of institutions. Efforts made to improve the conditions of work are also tangible ways an administration can indicate its interest in making a faculty more effective. Steps taken to encourage intellectually and culturally oriented activities on a campus can indicate to the student body the extent to which the administration values such things. The faculty in its turn can help shape the environment in the direction of greater achievement by making more demands on the students.

What are the evidences of change? They can be written or unwritten. They are best seen in the way in which the policy and posture of an institution are interpreted, in the way in which those who shape opinion express themselves on academic and nonacademic subjects. The marks of change are seen in the extent to which there is a raising in what Eddy has called "level of expectancy."

A changed atmosphere is also revealed in the extent to which an institution indicates that it knows what it wants to accomplish. It is seen in changes in the amount of time spent in peripheral matters, on what has been called the "organized distraction" on a campus. It is seen in the extent to which there is dissatisfaction with imperfection, or a determination to improve.

There is bound to be some resistance to efforts made to change a college's environment. Insofar as raising academic standards are concerned, resistance on the part of students can sometimes be serious. David Riesman has observed that "just as in the fac-

tory productivity rises in spite of immense restrictions of production by workers, so the colleges get better, I think, in spite of the resistance students put up against being educated."[3]

Sometimes this resistance takes the form of inertia or apathy; sometimes it is a reflection of conservatism or traditionalism. In other cases, of course, resistance to change is stronger among the staff than among the student body. The tradition-incrusted ruts are deep on many campuses. Often the ruts become trenches of established opinion or vested interests which block institutional progress.

Anyone concerned with shaping a campus climate must also be aware of the forces at work outside the gate. One must not overlook the role played by the alumni, many of whom have a different image of their alma mater than

[2] (Washington, D. C.: American Council on Education, 1959), pp. 28-29.

[3] "Student Culture and Faculty Values," in Margaret L. Habein (ed.), *Spotlight on the College Student* (Washington, D. C.: American Council on Education Problems and Policies Commission, 1959), p. 9.

the one shared by the president and faculty. Those institutions in society which operate purse strings, such as the government, industrial organizations, and foundations, sometimes color a campus climate by their financial support of segments of the university at the expense of other portions or by encouraging an institution to go in directions contrary to those considered most important by educators.

Then, too, the public at large helps influence the climate of a campus, in that the value systems of our society are reflected onto the campus scene. No college or university operates in a vacuum. It sometimes seeks to ignore the value system of the larger community of which it is a part. It occasionally offers an alternative value system in competition with that which is accepted by a majority of the population. In any event, the shaping of the campus climate for the better may have repercussions in the community at large.

One problem connected with a college's effort at upgrading is the conflict of interests found in any campus community. I am not referring to the traditional rivalry between the various disciplines or the imperialistic tendencies of some departments and schools that view improvement solely in terms of aggrandizement, nor am I referring to the conflict that is supposed to exist between faculty and administration. I refer, rather, to the dichotomy of purposes between the faculty and the student body. To the faculty a college is an institution established for the purpose of teaching and learning. The academic emphasis is uppermost. The discipline of the mind, the development of intellectual faculties, and the search for truth are of primary concern.

Students' value emphasis differs

To the student body, however, colleges and universities are frequently thought of in different terms. There are social ends that transcend the intellectual in importance. There are also vocational goals that motivate the student to spend his years studying subjects which, in his opinion, should have some practical value. Thus a tension created by conflicting impressions of the purpose of the college can exist between faculty and students. Dealing

successfully with this tension and trying to eliminate it are part of the process of changing the campus climate.

The personality of the student body has a bearing on the means used to encourage college improvement. Recent research supports the hypothesis that there are different personality traits dominant among students at different institutions, that one may draw a "college characteristics index" for a student body.[4] While one campus will seem to attract students who maximize professional advancement, another campus will draw students with social proclivities. At some schools the student body appears to prefer the authoritarian approach to learning. At others the undergraduate body is less docile, more prone to question the wisdom of the faculty. In some cases, the student body is ready, willing, and able to participate in effecting a change of climate. In other cases, there is little in the way of leadership that can be expected or desired from this segment of the campus community. In still other cases, perhaps, one must start by replacing the students by those who are likely to benefit from a higher quality program. Understanding the campus climate through the study of the personality of the student body has its promises; it has as well its limitations.

To summarize, let me suggest a number of hypotheses which, I believe, have a bearing on the success of any efforts to change a campus climate. First, there must be decision by persuasion. Second, there must be a broad base of participation. Third, legislation is not enough. Its implementation is what is important. Fourth, there is great value in communication. The academic community must be apprised of what changes are occurring and the reason for those changes, so that there may be a better understanding of the institution and its objectives. Fifth, there is a need to follow up on changes in the environment after they are made to assure that they are not transitory or superficial. Finally, there must be use of the talents at hand. There must be indigenous improvement—not an artificial transplanting of some characteristic or activity which seems to encourage high quality programs in another college or university. Institutions which succeed in establishing a climate conducive to excellence are those, I believe, in which are found a high morale, a sense of purpose, and clear-cut, well-defined objectives known, understood, and appreciated by all segments of the campus community.

I should like to conclude with a quotation from Woodrow Wilson's Phi Beta Kappa address at Harvard entitled, "The Spirit of Learning" given some 50 years ago.

"So long as instruction and life do not merge in our colleges, so long as what the undergraduates do and what they are taught occupy two separate, air-tight compartments in their consciousness, so long will a college be ineffectual.... If you wish to create a college, therefore, and are wise, you will seek to create a life.... It is the duty of university authorities to make of the college a society, of which the teacher will be as much, and as naturally, a member as the undergraduate. When that is done, other things will fall into their natural places."[5]

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[4] See p. 24.

[5] Quoted in McGeorge Bundy, *An Atmosphere to Breathe; Woodrow Wilson and the Life of the American University College* (New York: Woodrow Wilson Foundation, 1959), pp. 13-14.

BY C. ROBERT PACE

Five college environments

The psychological characteristics which differentiate basic types of colleges and their effects—their "educational press"—on students

The research described in this article seeks to identify the educationally and psychologically functional environment of a college. Cumulatively, rules and regulations, personnel policies, classroom practices, activities and interests of students and staff, features and facilities, and so on, constitute an educational press upon the awareness of students, and hence psychologically tend to make some kinds of behavior more satisfying and rewarding than others in the particular environment. The press of the environment, as the student sees it, defines what he must cope with and clarifies for him the direction his behavior must take if he is to find satisfaction and reward within the dominant culture of the college. The environmental press, in this sense, is closely related to the concept of objectives for it suggests the implicit or operational influences of the college, whether or not these agree with the explicitly stated purposes in the college's official announcements.

College Characteristics Index

An instrument based on this concept was constructed. Called the College Characteristics Index, it is now in its third revision.[1] It consists of 300 statements about college life. The statements refer to curriculum, to college teaching and classroom activities, to rules and regulations and policies, to student organizations and activities and interests, to features of the campus, and so forth.

Some of the items are quite objective in that they refer to easily observable or verifiable events or practices or features of the colleges. For example: "There are no fraternities or sororities." "Professors usually take attendance in class." "Concerts and art exhibits always draw big crowds of students." "Students' midterm and final grades are reported to parents." Other items are rather subjective or impressionistic. For example: "Many students here develop a strong sense of responsibility about their role in contemporary social and political life." "Everyone has a lot of fun at this school." "Modern art and music get little attention here." "Students set high standards of achievement for themselves." These examples show briefly what the content of the Characteristic Index is like.

Structurally, the items are grouped into 30 scales of 10 items each, these being environmental press counterparts of 30 personality needs taken originally from Henry Murray's classification, and included in the Activities Index by George Stern. There are, for example, scales to measure the press toward Understanding, Reflectiveness, Objectivity, Nurturance, Succorance, Affiliation, Order, Deference, Energy, Change, Sentience.

100 colleges tested

The items themselves are answered by college students—*true* if they think the statement is generally characteristic of their college, is something which occurs or might occur, is the way people tend to feel or act; and *false* if they think the statement is generally not characteristic of the college.

So far, the Index has been tried out in nearly 100 colleges and universities. Enough is known about the test itself to say with some confidence that it is psychometrically adequate. A brief accounting will serve to verify this statement.

1. Of the test items, 79 per cent have a discrimination index of .40 or higher, and 99 per cent have a discrimination index of .20 or higher.

2. The variance of scores within institutions is significantly smaller than the variance of scores between institutions.

3. What students say is true or false about the college environment is not influenced by their own personality needs. The College Index is not, in other words, a personality test in disguise.[2]

4. There is as much agreement in re-

C. Robert Pace, chairman of the department of psychology at Syracuse University, is on leave this year and working with the Center for Advanced Studies in the Behavioral Sciences at Stanford University. The above article is based on a paper presented by Dr. Pace at the annual meeting of the Western Personnel Institute in November 1959.

[1] The College Characteristics Index was developed jointly by the writer and George G. Stern at Syracuse University. For the rationale of the test, together with some early results, see: C. Robert Pace and George G. Stern, "An approach to the measurement of psychological characteristics of college environments," *Journal of Educational Psychology*, October 1958, pp. 269-277.

[2] A detailed analysis is reported in Anne McFee, "The relation of selected factors to student perception of a college environment" (Unpublished Master's thesis, Syracuse University, 1959).

sponses to the so-called subjective or impressionistic items as there is to the items which are more readily verifiable.[3]

5. The overall picture of the college environment obtained from responses of faculty members and administrators to the test is highly consistent with the picture obtained from student responses.

6. The results obtained from small, highly selected top scholarship students are very consistent with results obtained from a larger and representative cross section of students.

7. Test-retest results from the same students are highly consistent.

All these correlations, between students and faculty, between representative and unrepresentative samples, and between descriptions taken several months apart, are around .90.[4]

From the test results which have been accumulated, what can be said about the variety of college cultures in America, about the extent to which colleges differ from one another in their presumed psychological impact upon the student, and about the variables which tend to go together in defining the psychological characteristics of colleges?

Normative sample selected

During the spring of 1959 the College Characteristics Index was filled out by groups of students in some 60 institutions. Out of this testing program, 32 institutions were selected as a normative sample, consisting of liberal arts colleges (highly selective and relatively unselective, nonsectarian and denominational, coeducational and noncoeducational), universities (public and private), and various professional schools (education, engineering, and business, some separate and some parts of larger universities). There are some notable omissions in this norm group —none from the Ivy League and none from the West Coast—but it is nevertheless a diverse assortment of institutions spread geographically over most of the country.

How different are these institutions?[5] One simple way to answer this question is to see whether the features which are most characteristic of one college are also most characteristic of another. The test yields scores for 30 variables or features. These 30 scores, expressed as standard scores, can be arranged in rank order from high to low. By comparing the rank order of scores between colleges one gets a general index of the degree of similarity between one environment and another. For the 32 institutions these rank order correlations ranged from +.93 to —.87. Between some colleges the relative environmental pressures are nearly identical; between others the relative pressures are almost totally opposite.

If all one knows about the institution is that it is a small denominational liberal arts college, or a large state university, or an engineering school, or a teacher-training school, or that it is located in a particular geographic region, one knows very little about its psychological environment. The familiar classification systems cover up a great diversity. The correlations among seven liberal arts colleges, all private and nonsectarian, ranged from +.93 to +.01. The correlations among seven small liberal arts denominational colleges ranged from +.78 to —.35. The correlations among seven large universities, both public and private, ranged from +.87 to —.13. The correlations among three teacher-training schools ranged from +.71 to —.35. The correlations among four engineering schools ranged from +.64 to +.10. The correlations among six institutions all located in southeastern states ranged from +.82 to —.75. The correlations among four New England colleges ranged from +.72 to —.80. These are extraordinary differences.

If one looks, instead, at the relationships among the test variables (environmental press scores) across the

[3] *Ibid.*

[4] [Specifically a correlation coefficient is a number that expresses the extent to which two variables go together. This relationship can range in value from +1, a perfect positive relationship, to —1, a perfect negative relationship. For example, when obtaining test-retest results, a correlation of +1 would signify that a person who gave certain *true* or *false* responses to the 300 items on the College Characteristics Index when it was first administered, gave exactly the same responses when he was re-tested several months later. A correlation of —1 would mean that the pattern of responses was in exactly the reverse direction. A zero correlation represents a complete lack of relationship. Thus, in the correlations between college psychological environments given by Dr. Pace the size of the correlation coefficient shows the degree to which different colleges have environmental pressures which are nearly identical or almost totally opposite.—ed.]

[5] The analyses presented in the remainder of this article were made jointly by the writer and Anne McFee at the Center for Advanced Study in the Behavioral Sciences, Stanford University.

normative group of 32 colleges and universities, one sees the college environments in a different perspective. This view reveals what kind of pressures or characteristics tend to go together in college environments generally, and how the presence or absence of one group of characteristics is related to the presence or absence of others.

Intellectual and social factors

There seem to be two major factors[6] which account for most of the differences among college environments. One is intellectual; the other is social. The intellectual dimension runs from a high stress on abstract, theoretical, scholarly understanding up to a high stress on practical, status-oriented concerns. The social dimension runs from a high stress on group welfare to a rebellion against group life. It is possible, further, to differentiate two patterns of high intellectual emphasis—one humanistic and one scientific. Tentatively, then, there are five clusters, or types of environments, which can be described.

The first type of environment is identified by high scores on the environmental press scales for Humanism, Reflectiveness, Sentience, Understanding, Objectivity, Energy, and Achievement. Here are some of the items which characterize this pattern of press:

"The school offers many opportunities for students to understand and criticize important works in art, music, and drama. A lecture by an outstanding literary critic would be well attended. Books dealing with psychological problems or personal values are widely read and discussed. Long, serious intellectual discussions are common among the students. On nice days many classes meet outdoors on the lawn. Concerts and art exhibits always draw big crowds of students. There is a lot of emphasis on preparing for graduate work. Many students are interested in round tables, panel meetings, or other formal discussions. The school has an excellent reputation for academic freedom. Class discussions are typically vigorous and intense. The professors really push the students' capacities to the limit. Students set high standards of achievement for themselves. Faculty members put a lot of energy and enthusiasm into their teaching."

These are environmental characteristics which encourage curiosity about new knowledge and new ideas, self-understanding, new sensations and appreciations. College is an expanding experience, testing the limits of one's capacities.

The second type of environment is also strongly intellectual and energetic but its predominant emphasis is toward science and competition for achievement. It is identified by high scores on the press scales for Scientism, Change, Fantasied Achievement, and by low scores on the press scales for Adaptiveness[7] and Order. Here are some characteristic features:

"Laboratory facilities in the natural sciences are excellent. Many of the science professors are actively engaged in research. When students get together they often talk about science. The students represent a great variety in nationality, religion, and social status. The history and traditions of the college are not emphasized. Most students do not dress and act very much alike. The faculty encourage students to think about exciting and unusual careers. Student organizations are not closely supervised. Professors do not regularly check up on the students to make sure that assignments are being carried out properly and on time. Professors do not usually take attendance. Classes do not always meet at their regularly scheduled time and place."

The environment appears to be one in which survival is the students' responsibility. The curriculum is there. The laboratories are good. The professors are busy with research. If the student wants to learn science, let him learn it. There are exciting rewards for those who have the ability and the independent motivation to survive the competition.

The third type of environment is quite the opposite of the two which have been described. The dominant concern in the third type is with the practical and applied rather than the abstract or theoretical; and with this goes an equally strong concern for establishing one's status in relation to peers and accepting one's status in relation to authority. The scales which go together in this cluster are Practicality, Abasement, Dominance, Play, and Sex. Items descriptive of this kind of environment are as follows:

"The college offers many really practical courses such as typing, report writing, and so forth. Most students are interested in careers in business, engineering, management, and other practical affairs. Students are more interested in specialization than in general liberal education. Students are not encouraged to criticize administrative policies and teaching practices. For a period of time freshmen have to take orders from upperclassmen. There is a lot of apple polishing around here. Student elections generate a lot of in-

[6] This is based on a very simple factor analysis (centroid program for IBM 650 computer) with one rotation of the first factor. The correlation matrix was developed from the standard score means on each of the 30 variables (converted to rank orders) for each of the 32 schools in the norm group.

[7] A better name for the Adaptiveness scale would be Closeness of Supervision.

tense campaigning and strong feeling. There is a recognized group of student leaders on this campus. There are lots of dances, parties, and social activities. Every year there are carnivals, parades, and other festive events on the campus. There is a lot of informal dating during the week—at the library, snack bar, and movies. There are several popular spots where a crowd of boys and girls can always be found."

One may wonder why the scales labelled Play and Sex belong in this cluster. The reason is that many of the items in these scales reflect the importance attached to establishing interpersonal status and to gaining privilege and prestige in the campus community.

The fourth type of environment is identified by high scores on the press scales for Affiliation, Nurturance, Succorance, and Conjunctivity. The emphasis is on human relations, group welfare, social responsibility, and the well-mannered and well-managed community. Here are some of the items which characterize this type of environment:

"The school helps everyone get acquainted. There is a lot of group spirit. Faculty members call students by their first names. Many upperclassmen play an active role in helping new students adjust to campus life. The college regards training people for service to the community as one of its major responsibilities. The school has a reputation for being very friendly. Students often help one another with their lessons. Counseling and guidance services are really personal, patient, and extensive. Instructors clearly explain the goals and purposes of their courses. Assignments are usually clear and specific, making it easy for students to plan their studies effectively. Activities in most student organizations are carefully and clearly planned."

The fifth and last cluster is best described as a rebellion against the group welfare-oriented community. The high press scales here are Aggression and Impulsion. The following items are illustrative:

"Students are sometimes noisy and inattentive at concerts or lectures. Many students seem to expect other people to adapt to them rather than trying to adapt themselves to others. Students occasionally plot some sort of escapade or rebellion. Many informal student activities are unplanned and spontaneous. There seems to be a jumble of papers and books in most faculty offices. Students often start projects without trying to decide in advance how they will develop or where they may end."

Relationship between patterns

Here then are five ways of characterizing college environments. The first is predominantly humanistic, reflective, and sentient. College is an expanding intellectual experience, testing the limits of curiosity about new ideas, new sensations, new capacities, and self-understanding. The second, equally demanding and vigorous, is predominantly scientific and competitive, requiring a high degree of individual concentration for survival. The third is practical, applied, concerned with interpersonal and extrapersonal status. In the pursuit of utilitarian goals, one's relationship to authority and the gaining of privileges and visible rewards are important. The fourth type of environment is strongly other-directed. There is a high level of concern for group welfare, friendships, organization, and social responsibility. The fifth type is aggressive and impulsive, in rebellion chiefly against the other-directed, highly socialized community.

The relationships between these five patterns of college environment variables should be of particular interest to college administrators, personnel officers, and faculty members. The table on page 28 shows the correlations.

The variables which push toward intellectual expansion and achievement, whether humanistic or scientific, correlate positively among themselves and negatively with the practical, status-oriented variables. The humanistic emphasis is unrelated to the group welfare emphasis and unrelated to rebelliousness. Apparently the strongly science-oriented environment is also characterized by nonconformity and independence. The status-oriented, practical environment has some positive relationship to rebellion but little or no relationship to group welfare. It is clearly anti-intellectual but not anti-knowledge. The college as a friendly, socializing, well-mannered environment is not anti-intellectual in general, but it is anti-scientific and competitive, and anti-rebellious.

Personnel practices, rules and regulations, teaching methods, study requirements, features and facilities, and the whole network of events and activ-

Relationships between five types of college environments[1]

	Humanistic	*Scientific*	*Practical, status*	*Human relations*	*Rebelliousness*
Humanistic, reflective, sentient	.75				
Scientific, competitive	.48	.55			
Practical, status-oriented	−.64	−.41	.67		
Human relations, group welfare	−.01	−.45	.12	.54	
Rebelliousness	−.08	.26	.23	−.37	.66

[1] Average correlations between clusters of variables.

ities and relationships to be found on a college campus constitute a system of pressures or influences which define the psychological-educational character of the environment. The various pieces of the college environment fit together (at least tentatively they seem to) in the five patterns just described.

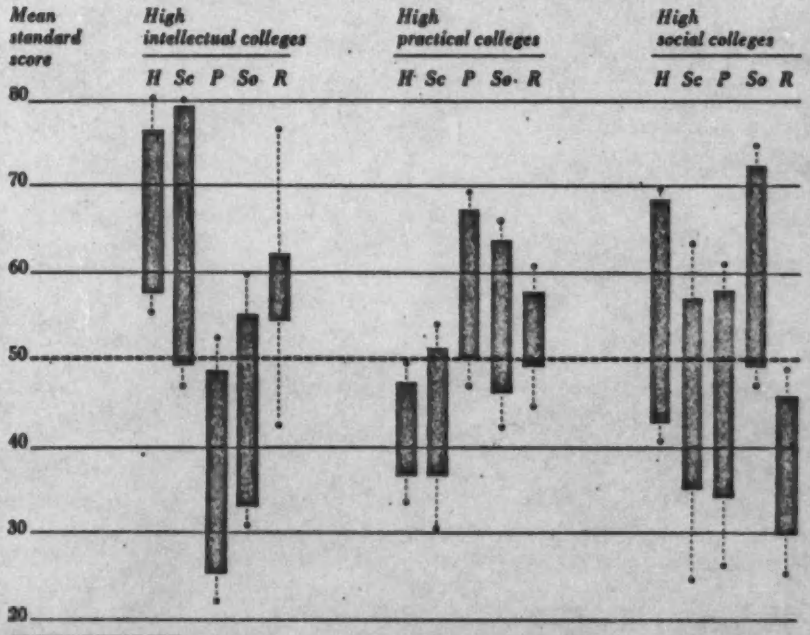
One can now relook at colleges to see whether these patterns are, in fact, exemplified in the environment of real institutions. For this purpose a factor analysis of institutions was made. There emerged a cluster of institutions at each end of the principal axis; and at a right angle from the center of this axis was another cluster of institutions. By referring to the press scores of each institution in these three clusters, one finds that the groupings can be described as high intellectual, high practical, and high social. These obviously correspond to the major clusters which emerged when the variables, rather than the institutions, were analyzed—humanistic, scientific, practical, status-oriented, and group welfare-oriented. The patterns of environmental press found across a heterogeneous assortment of colleges are also found clearly within the environment of individual colleges. The accompanying chart shows this. The bars show the range of standard score means for all of the colleges in each group on all of the variables in each press cluster, with the one highest and the one lowest mean score indicated by the thin line extensions on the bars.

Among the high intellectual institutions all of the standard score means on all of the seven humanistic variables are higher than all of the standard score means on all five of the practical, status-oriented variables. There is no overlap. The chart shows many other examples of non-overlapping distributions. In general, the relationships presented in the correlation table are all clearly illustrated in the chart.

A few not too cautious speculations about the meaning of these results may be provocative. The environmental differences between colleges may be greater than the individual differences between students. Certainly no one type of college environment will serve all types of students. Which types of students will profit most in which types of environments is the next question on the research agenda. And for the larger and more complex colleges and universities one also needs to raise this question about the sub-cultures which operate within the general environment. Meanwhile, one might suppose that the friendly, social, group welfare kind of environment would be good for future dwellers in suburbia and the employees and managers of industries that are self-conscious about human relations. It may be especially relevant for women. Togetherness is an important and respectable virtue. But in the economic, cultural, and political diversity of the modern world, socialization is not enough. It is a useful process. But what ends shall this happy family pursue? The rebellion environment, on the other hand, merely reacts against socialization, and offers no substitute direction of its own. The practical, status-oriented environment doubtless provides needed skills for society's work; and for some it may offer practice in the struggle for room at the top. For most, it seems more likely to be a good influence in maintaining a status quo of ideas and human relations; and in this sense it can be called a containment environment. For the bright and adventurous, the intellectual-humanistic-scientific environment is full of promise and excitement. It may be annoyingly rebellious at times for the administrator, and it may not have much good neighborly spirit in it, but it is potentially creative. It offers the hope of an adolescent breakthrough toward new directions, new solutions, and new ways of life.

Patterns of environmental press in three types of colleges[1]

Legend: H = Humanistic variables; Sc = Scientific variables; P = Practical, status-oriented variables; So = Social, group welfare variables; R = Rebellion variables.



[1] The bars in each column show the range of standard scores with the exception of the highest and the lowest mean scores which are indicated by dots. Mean score = 50; Sigma = 20.

Pp. 23-28 as 7-2-68

BY M. BRYCE LEGGETT

Which freshmen will fail?

A special program at Massachusetts Institute of Technology sheds new light on causes of academic failure—and success

While the school guidance counselor may be mystified when the college admissions officer turns down the boy he has recommended so highly, he is probably even more at a loss when the really promising student he advised fails to do well after admission to college. In the latter case, the admissions officers at the college may have agreed that the applicant looked good; in fact they may have turned down other qualified candidates in order to admit him. What happened? What or who went wrong?

As the result of asking these questions about (and to and with) a group of freshmen at the Massachusetts Institute of Technology who were involved with me in a special advising program, I have some guesses as to answers. There are some general categories of response that can be listed. But I am prepared to plead that there do not seem to be any clear-cut steps that school counselors or admissions officers can take to avoid recommending or admitting future failures.

One frequently hears the comment that the student who flunks out in his first year is lacking in inherent ability, is inadequately prepared, or has ineffective study habits. These are rarely the real reasons. First, the required entrance tests are aimed at measuring inherent ability, not just memory, and generally do this quite well.

The second charge, inadequate preparation, is not the answer either. The student with ability can and does overcome any deficiencies in his schooling; the boy from the one-room high school (we have a few) can catch up with the boy from the most highly rated secondary school in a term or two. He recognizes his weak areas (and these are comparative, not absolute) and works harder on them. In the few cases where it has been insisted that the sole reason for failure was poor preparation, a second round in a specialized preparatory school hasn't resulted in a better record at M.I.T. Conversely, the best formal school preparation won't make up for lack of ability and certain other qualities to be discussed later.

The third reason put forth, poor study habits, poses a tougher question. There is some evidence that entering students in most colleges don't study effectively. They begin at the top of the work-pile and plod to the end; they concentrate on the trees without ever deliberately trying to identify the forest first; they are systematic to a fault. But this too can be remedied. Most of our students teach themselves how to study, and rather quickly at that. They report increasing "efficiency" within a couple of months and, to their amazement, the decrease in "goofing-off" time doesn't account for all the improvement. I doubt that any of the students we admit are incapable of developing good study habits quickly—if they want to.

"If they want to"—this is the most important criterion for success in college as I see it. I would say that those students who fail at M.I.T. all fall in the category of those who lack volition—except for the few below-average candidates for whom we've ignored the usual academic limits because we believed their motivation was high enough to overcome a marginal ability. (Incidentally, no matter where you put the margin, there are always marginal cases.)

But having made that glib comment, we are faced with the reality of our failures. Why did they not want to do what had to be done to get satisfactory grades at M.I.T.? Was it due to laziness? Weak or spurious motivation? Personal problems? Some quality of M.I.T. as it is or as it seems to be? All of these are observable reasons for failure and there are undoubtedly more.

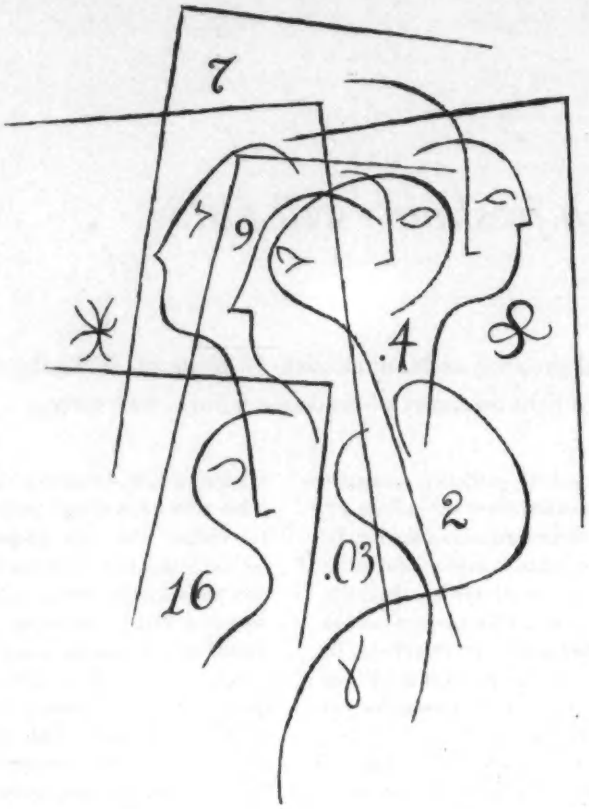
Laziness is an easy term to apply. It's not so easy to justify. The boys we admit should be able to carry the academic load we place on them and have some time left for other activities in addition to eating and sleeping. This is our aim when admitting them and most of our students are able to live up to our expectations.

In the case of the failing student, one asks what else he is doing with his time, where he is putting his effort, and why. Are his other activities contributing to him as a person? Are they an essential part of his growth to maturity? Ought they, in fact, to be *for him* more important right now than studying? Sometimes the answers are unequivocally "yes!" Is this laziness? Or, again, is his lack of attention tied in with those questions of motivation, which we will next consider? Generally, what is dubbed laziness is nothing more than a symptom—when it is anything more than a convenient term of opprobrium with which to flail a youngster because it's easier to flail than to think.

So we come to motivation. My student friends tell me that "you have to be 'gung-ho' for the things we study here to come out on top." And this is probably true. The student has to see in his studies a source of excitement and personal commitment in order to take the pace. He may see the job he wants; we hope he sees the mind he wants.

Can't we feel sure that a student who enrolls in M.I.T. has adequate motivation? Not yet. This is one of the areas where guidance and counseling of high school students can help, but we haven't any sure measures or tests to help us yet. There will be the student whose motivation is doubtful; he isn't sure what he wants to be. He is "pretty sure" and he won't admit to an admissions counselor that he is doubtful, especially since he wants to get in. He may never have had to work hard enough at any subject to realize that it is less pleasing than another. This is a problem we must expect if we are attracting top-level minds.

After he begins his studies, perhaps he is exposed to rigorous and adult work in history or the social sciences or literature for the first time and finds that, when these subjects are presented with the same intensity as are the sciences, they are more interesting than science or mathematics. If he does find this out, he may fail to do well here simply because he is not able to devote most of his time to the subjects he likes. Interestingly enough, a frequent example of difficulty of this kind is indecision between physics and music as vocations; the resolution falls about an equal number of times on each side. In these cases an important but disruptive factor for the boy has been the anticipated relative income from the two professions.



Current misconceptions at fault

Another spurious motivation appears to result from our post-Sputnik insistence on the need for scientists and engineers. The student who wants to be something else is drawn in by the drum-beating and decides to try engineering. He's serious, he's sincere about it, but it just doesn't work out.

Then, too, there are misconceptions about the term "engineering" as we use it. The fellow who wants to tinker as an expert and push a slide rule through someone else's equations may well think that this is engineering; in some quarters it is. But at M.I.T. he finds himself in a two-year mathematics sequence that is on the road to a Ph.D. in mathematics and in a parallel sequence in physics that is the start of the Ph.D. physics program. *And*, he's expected to "do engineering" in this fashion, with these same basic tools and, more importantly, with the pioneering spirit of modern scientific method. He has the choice of revising his idea of engineering or of being unhappy. If the latter, he may fail.

It would be less than candid to omit mention of the motivation of a few candidates who take as their only goal "getting into" M.I.T. This doesn't furnish them with the drive needed to do good work after they are here. Another weak motivation, and one that can be inadequate, is to get the prestige of an M.I.T. degree. And, unfortunately, there is the imposed motivation, one that really belongs to the parent but has been induced in the boy through those subtle and important relationships between parent and child. The boy, if he has only this parental ambition to push him on, doesn't have a chance to do well. (Sometimes, I think with hindsight, that we've admitted a parent and flunked him out. The tragedy is that the boy has had to do the work and bear the shame and, at least in part, cope with the heartache.)

My first encounter with the "romantic" student, which is still another poorly motivated type, was some years ago, in my first class—"I want to do research in leukemia, but why should I grub around with qualitative analysis?" We still have students like these on occasion; today they want to conquer space.

Motivation, then, is important and lack of proper motivation can account for failure to do well. But what about the student whose inherent ability is high, whose preparation is first-class, and whose motivation is undeniably strong and true? Occasionally he fails, too.

This brings us into the area of personal problems. With these, in general, the skill and insight of the trained counselor are most valuable and the layman makes his contribution by being a trusted friend, by being willing to concede that there is a possibility that something very real is here and

that simple epithets like laziness, poor study habits, and so forth aren't necessarily applicable.

In an age weaned on Freud, with every man a psychoanalyst, it shouldn't be necessary to point out that not all personal problems are apparent in their essential nature to those who have them. The personality has its own deviousness. But let's look at some of the many things that can happen to a young man to impair his efficiency.

He can, of course, be unhappy with M.I.T. Sometimes this happens because, as a community, we are quite unlike what he has known and feels congenial in. He may find our competitiveness (which I think is more often the effect of able minds working hard, than true aggressiveness) too much for him. He may realize—and I've heard this said by students—that we want to educate him broadly and be disturbed that we are making him change too fast. These are, I think, possible reactions of some students to M.I.T. as it is. There are all sorts of reactions to M.I.T. as it is thought to be, but in objective fact is not. Most students adjust to the Institute (or any community they join) and most expect to (at least when they are normal, well-balanced youngsters). But some can't. They may well fail.

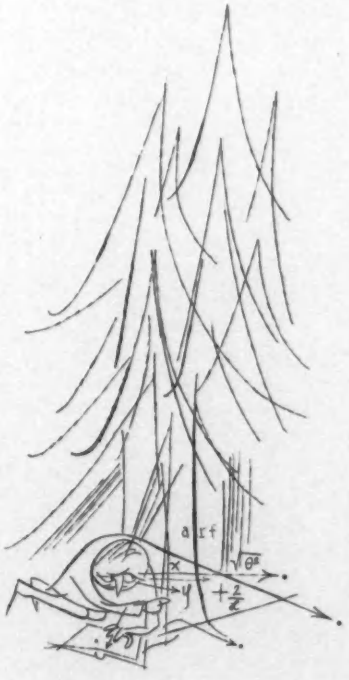
New societal adjustments

Or, although he may adjust to M.I.T. as he finds it, the student may run into the concomitant problem—not being able to adjust well to being away from the community and patterns he formerly called normal. It isn't always easy to give up old habits and attachments. It isn't always dramatic, either, as in the case of the boy who promised to be true to Susie, the best girl in Podunk, and now finds that there are lots of girls at Wellesley who have Susie beat a mile, but who still has Susie back home waiting and being true. The boy doesn't want to hurt Susie, but, well—how does he grapple with this and do all those problems in calculus at the same time? Funny? Not for him. This is deadly serious. Or, more profoundly serious, this kind of trouble may present the possible drastic challenge that twentieth century science can give to a philosophy or religion learned at home which is a source of security. Some young men can't work through to the resolution of this paradox and do good academic work at the same time.

Another personal adjustment problem may arise more frequently in the future than it has in the past because a larger portion of our students come to us with extremely strong academic records. A few of these will be uncomfortable with their first set of grades—as in the case of the student who made all A's in school but averages C at M.I.T. If the boy's well-being rests on his grade status, he may have to reevaluate himself and his aims. Incidentally, this is an area where parents and schoolteachers may start throwing epithets like "lazy" at him. This parental reaction doesn't help the student.

It's a cruel fact of academic life that any grading system ranges from excellent to failure and that one's ranking in the system is determined by the school or college. If all the entering students had all A's in secondary school (M.I.T. *does not* claim such a record!) there would still be a preponderance of C grades in the college with (happily) some A's and unfortunately some F's. Somehow or other, since it is the students themselves who determine what the average at M.I.T. will be, there will always be more average students here (M.I.T. average, that is) than any other variety.

There are all sorts of specific problems that can bedevil a college student. And, from the lay point of view, the old idea of possession by devils isn't too far off the mark. There may be no apparent surface cause, no specific event to grapple with, no adjustment problem that an observer can see—and yet, things just don't go right.



M. Bryce Leggett is associate director of admissions at the Massachusetts Institute of Technology. This article first appeared in the *Bulletin of the M.I.T. Educational Council* for January 1960.

We do know of boys like this who have deep-seated psychological problems. We offer them the assistance of professional people who can probe deeply and get at the causes—causes no one in school, no admissions officer, no dean had any reason to suspect. But they are there. They interfere. They kick up surface manifestations that look like some of the other factors we've discussed. These personal problems can result in academic failure, too, if we're not skillful enough to at least hypothesize their existence and trusted enough to persuade the boy to seek professional help.

From what I have said, one might think that all of our students are problems if one weren't aware of the full perspective. After all, over 70 per cent of our entering students complete their programs on time and only 7 or 8 per cent fail during the first year. Moreover, a significant portion of those who withdraw are convinced that their experience at M.I.T. was a happy and valuable one. The great preponderance of the freshmen who carry a full academic load (sometimes an overload) do well in all their subjects, and take an active part in campus and community life.

There is no doubt that many students who are ultimately successful have encountered some of these problems on the way. This is one reason why we can't label our failing students

with a simple "poor preparation" or "lazy," and proceed to abandon them. Nor do I think that we should shelter all of our students to the extent that none of them would ever have to encounter these problems. Anyone will agree that education for creative living and the retention of immaturity from the cradle to the grave are incompatible concepts. It is not at all clear to me that we should avoid the risks inherent in having students who might fail—even if we could tell in advance which ones these will be. And if we tried this, we would, in the present state of the art, miss some real stars, too.

The "x" factor of change

One clear impression to be gained in admissions work is that no one is expert enough to tell which candidates will have difficulty. Most frequently, we spot the wrong ones when we try to anticipate problems before the student arrives (by that time, in addition to the admissions data we also have a specially solicited letter from the parents introducing the boy to us). And it is possible to find an admissions folder for a boy on the Dean's List which reads just like that of a boy in difficulty. There are simply some things about any person that will change after he's lived another year, especially if he's made a big change in physical, mental, and spiritual environment in that time. How he responds to the change is in some part unique with him.

There are areas in which school counselors and admissions officers can help. They can work to be sure that the high school student knows as clearly as can be known what he is planning to do. This is guidance. They must present him with a factual picture of college life and of the specific institution he is interested in, and give him some idea of what a professional life entails. They must use every means at their disposal to see that he knows the meaning of the words he uses—science, engineering, humanities; that he has opportunities to test his aptitudes and skills rigorously; that his motivation is relatively strong; equally important, they must make him realize that, however we like to pretend otherwise, we adults do seek help with our problems and share our burdens with those who want to help us.

College Board member colleges

Check (✓) indicates participants in the College Scholarship Service. Dot (•) indicates subscribers to the May 18 Candidates Reply Date Agreement for 1960. An asterisk (*) following a college's name means scholarship candidates are excepted from the Candidates Reply Date Agreement; a triangle (△) means single-choice, "early decision" candidates are excepted from the Agreement; a dot in a circle (⊙) indicates colleges elected to membership at the Board meeting on October 28.

Member colleges

• ✓ Adelphi College*△
• ✓ Agnes Scott College△
• ✓ Albertus Magnus College*△
• ✓ Alfred University
✓ Allegheny College
• American International College*
✓ Amherst College
• Annhurst College*△
• ✓ Antioch College*△
• ✓ Assumption College*△
Augustana College (Ill.)⊙
• ✓ Bard College
• ✓ Barnard College△
• Barry College△⊙
✓ Bates College
• ✓ Beaver College*△
✓ Beloit College
Bennett College (N. Y.)⊙
• ✓ Bennington College
• ✓ Bethany College (W. Va.)⊙
✓ Boston College
✓ Boston University
✓ Bowdoin College
✓ Brandeis University
Brooklyn College⊙
• ✓ Brown University
• ✓ Bryn Mawr College△
✓ Bucknell University
• Caldwell College*
• ✓ California Institute of Technology
Canisius College⊙
✓ Carleton College
✓ Carnegie Institute of Technology
✓ Carroll College (Wis.)
✓ Case Institute of Technology
• Catholic University of America*△
✓ Cedar Crest College
✓ Centre College of Kentucky
Charlotte College⊙
• ✓ Chatham College△
• ✓ Chestnut Hill College*△
City College of New York
• ✓ Claremont Men's College
✓ Clark University (Mass.)
✓ Clarke College (Iowa)⊙
• ✓ Clarkson College of Technology*
✓ Coe College
• Coker College*△
• ✓ Colby College*
✓ Colgate University
• College Misericordia*△⊙
• ✓ College of Mount Saint Vincent*△
• ✓ College of New Rochelle*△
✓ College of Notre Dame of Maryland
College of Saint Elizabeth
• College of Saint Rose*
College of the Holy Cross
• College of the Sacred Heart*△⊙ (Santurce, Puerto Rico)
• College of William and Mary*
✓ College of Wooster
• ✓ Colorado College*△
• ✓ Columbia College (N. Y.)
• ✓ Connecticut College△
Converse College
• Cooper Union
✓ Cornell College
• ✓ Cornell University△
• ✓ Dartmouth College△
✓ Davidson College
• ✓ Denison University
✓ DePauw University
✓ Dickinson College
• ✓ Douglass College
✓ Drew University
✓ Duke University
• Dunbarton College of Holy Cross*
• ✓ D'Youville College*
✓ Earlham College⊙
Elmira College
• Emerson College
• ✓ Emmanuel College
✓ Emory University
• ✓ Fordham College*△
✓ Franklin and Marshall College
• ✓ Furman University
✓ Georgetown University
• George Washington University
Georgia Institute of Technology
• ✓ Georgian Court College*
✓ Gettysburg College
✓ Gonzaga University
• ✓ Goucher College△
✓ Grinnell College
✓ Hamilton College
Hampden-Sydney College
Hartwick College⊙
• ✓ Harvard College
• ✓ Harvey Mudd College⊙
• ✓ Haverford College
• ✓ Hobart College and William Smith College*△
• ✓ Hofstra College
• ✓ Hollins College△
Hood College
• ✓ Immaculata College*
• ✓ Immaculate Heart College*
• ✓ Iona College*△

• ✓ Jackson College for Women△
Johns Hopkins University
✓ Juniata College⊙
Kalamazoo College
✓ Kenyon College
Keuka College
✓ Knox College
• ✓ Lafayette College*△
• ✓ Lake Erie College
• ✓ Lake Forest College△
La Salle College
✓ Lawrence College
✓ Lebanon Valley College
• ✓ Lehigh University
• ✓ Lewis and Clark College
Loretto Heights College⊙
• Loyola University (La.) *△
• Loyola University of Los Angeles*△
✓ Lycoming College
• ✓ Manhattan College△
• ✓ Manhattanville College of the Sacred Heart△
Marquette University
✓ Mary Baldwin College
• ✓ Marymount College (N. Y.) *△
Mary Washington College of the University of Virginia
• ✓ Marywood College*△
• ✓ Massachusetts Institute of Technology
• McGill University (Canada)
• Menlo College
• Mercer University
Meredith College⊙
Miami University (Ohio) ⊙
✓ Michigan State University
• ✓ Middlebury College*△
• ✓ Mills College
Milwaukee-Downer College⊙
✓ Monmouth College (Ill.)⊙
Moravian College
• ✓ Mount Holyoke College△
Mount Mercy College⊙
• Mount St. Agnes College*△
• ✓ Mount St. Mary's College (Calif.) *
✓ Muhlenberg College
• Mundelein College*⊙
✓ Muskingum College
Nazareth College of Rochester
• Newark College of Engineering
• ✓ Newcomb College of Tulane University*△
• ✓ Newton College of the Sacred Heart
✓ New York University
• North Carolina State College*
• ✓ Northeastern University*
✓ Northwestern University
• ✓ Norwich University*△
• ✓ Notre Dame College of Staten Island*△
• ✓ Occidental College
✓ Ohio Wesleyan University
• Pacific Lutheran College⊙
• ✓ Pembroke College in Brown University△
✓ Pennsylvania State University
• ✓ Pomona College
C. W. Post College⊙
Presbyterian College
• ✓ Princeton University
✓ Providence College
✓ Queens College (N. C.)
• ✓ Radcliffe College△
Randolph-Macon College⊙
• ✓ Randolph-Macon Woman's College
• ✓ Reed College
• ✓ Regis College (Mass.)
• ✓ Rensselaer Polytechnic Institute
Rice University
✓ Ripon College
• Roanoke College△⊙
✓ Rockford College⊙
• ✓ Rollins College*
• Rosary College
• ✓ Rosary Hill College*
• ✓ Rosemont College*△
✓ Rose Polytechnic Institute
Russell Sage College
• ✓ Rutgers, the State University of New Jersey
• ✓ St. Bernard College*△⊙
• ✓ Saint Joseph College (Conn.) △
• ✓ Saint Joseph College (Md.) *
✓ Saint Joseph's College (Pa.)
• St. Joseph's College for Women*
✓ St. Lawrence University
• ✓ Saint Mary's College (Ind.) *
• Saint Mary's Dominican College*⊙
Saint Michael's College (Vt.)
Saint Vincent College⊙
• ✓ Salem College (N. C.) *△
• ✓ Sarah Lawrence College△
• ✓ Scripps College
• ✓ Seton Hill College*△
• Shorter College (Ga.)
• ✓ Simmons College
• ✓ Skidmore College△
• ✓ Smith College△
Southern Methodist University⊙
✓ Southwestern at Memphis
✓ Springfield College
• ✓ Stanford University
✓ Stetson University
• ✓ Stevens Institute of Technology
• ✓ Swarthmore College
• ✓ Sweet Briar College△
• ✓ Syracuse University
Temple University
✓ Thiel College
✓ Transylvania College⊙
✓ Trinity College (Conn.)
• ✓ Trinity College (D. C.) *△
• Trinity University*△⊙
• ✓ Tufts College of Tufts University△
• ✓ Tulane University*△
✓ Union College (N. Y.)
• United States Air Force Academy⊙
• United States Merchant Marine Academy
• United States Military Academy
United States Naval Academy
University of California
• ✓ University of Chicago△
• University of Colorado
University of Connecticut
University of Denver
University of Georgia
✓ University of Maine
✓ University of Massachusetts
• ✓ University of Michigan△
University of North Carolina
University of Notre Dame
• ✓ University of Pennsylvania
✓ University of Pittsburgh
• ✓ University of Puget Sound
• ✓ University of Redlands
• ✓ University of Rhode Island*
• ✓ University of Rochester△
• ✓ University of San Francisco
University of Santa Clara
• ✓ University of Southern California
• ✓ University of the South
• ✓ University of Vermont
• University of Virginia△
• ✓ Upsala College*
✓ Ursinus College
✓ Valparaiso University
✓ Vanderbilt University
• ✓ Vassar College△
Villanova University
Virginia Military Institute⊙
Virginia Polytechnic Institute⊙
✓ Wabash College
• ✓ Wagner Lutheran College
✓ Washington College
• Washington University*⊙
✓ Washington and Jefferson College
• ✓ Washington and Lee University*
• ✓ Wellesley College△
• ✓ Wells College△
• Wesleyan College (Ga.) *△
✓ Wesleyan University
• ✓ Western College for Women
• ✓ Western Reserve University
Westminster College (Mo.) ⊙
Wheaton College (Ill.)
• ✓ Wheaton College (Mass.) △
• Wheelock College*△
• ✓ Whitman College
• ✓ Whittier College
• ✓ Willamette University
✓ Williams College
✓ Wilmington College (Ohio)
• ✓ Wilson College△
Woman's College of the University of North Carolina
• Worcester Polytechnic Institute
• ✓ Yale University
• ✓ Yeshiva University*△
Young Harris College⊙

Non-member colleges participating in the College Scholarship Service

Albion College
Alma College
Art Center School
Ashland College
Bethel College (Kan.)
Bradford Junior College
Bradley University
Capital University
Chapman College
Chouinard Art Institute
Colby Junior College
College of Emporia
College of Saint Scholastica
Drake University
Drexel Institute of Technology
Elizabethtown College
Fairleigh Dickinson University
Gannon College
Greenville College
Heidelberg College
Hiram College
Holy Family College (Pa.)
Howard College (Ala.)
Illinois College
Illinois Wesleyan University
Indiana University
John Carroll University
La Verne College
Lindenwood College
MacMurray College
Mills College of Education
Mount Union College
National College of Education
Niagara University
Oberlin College
Pennsylvania Military College
Polytechnic Institute of Brooklyn
Pratt Institute
Rhode Island School of Design
St. John Fisher College
Saint John's College (Md.)
Saint Joseph's College (Ind.)
Saint Olaf College
Shimer College
Simpson College
University of Buffalo
University of Dubuque
University of Kansas City
University of Nebraska
University of New Hampshire
University of Toledo
Wake Forest College
Wayne State University
Westminster College (Pa.)
Wittenberg College
Wofford College

NEWS OF THE COLLEGE SCHOLARSHIP SERVICE

College reports due early

Analyses to be added: Consolidated reports showing the financial aid offers and awards made by colleges participating in the College Scholarship Service to their 1959-60 applicants will be issued to each of the 254 participants in mid-August. The reports will reach the colleges some six months earlier than in previous years.

As a new feature, each college's report will be accompanied by a summary containing a detailed analysis of the pattern of its aid offers and awards and how its practices compare with those of other colleges. It is hoped that the analyses will help answer questions that the colleges have had about certain aspects of their financial aid programs.

As with the previous reports, the colleges will supply the data on which the CSS consolidated reports will be based. A sample of the form on which the data is to be supplied was scheduled to be sent to the colleges in April. Forms for actual use are expected to be sent to the colleges by June 1 with a request that they be completed and returned by July 1.

In the early fall colleges will be asked to report on the final acceptance of aid offers by their enrolled freshmen. This will be done to furnish data for a projected CSS study.

Committees formed

On future role: Creation of a committee to make recommendations concerning the future role of the CSS was recently authorized by the trustees of the College Board.

Establishment of such a committee had been recently recommended by an *ad hoc* committee composed of Wilbur J. Bender, dean of admissions and financial aids at Harvard University, and Gene D. Gisburne, vice president for student affairs at the University of Pennsylvania and chairman of the College Board's CSS Committee.

The *ad hoc* committee also recommended that the CSS issue a statement of desirable practices for scholarship programs sponsored by noncollegiate agencies. It was suggested that the statement serve as a guide to CSS personnel in their work with sponsored scholarship programs, and also serve program sponsors as a statement of what colleges consider to be desirable features of financial aid programs.

On profile statements: A subcommittee on financial aid characteristics' statements was recently formed by the CSS committee. Among the data that such statements might contain are the test scores, the high school grade averages or class rankings, and other statistical and descriptive information pertaining to students who are awarded financial aid. The subcommittee will consider how such statements might be prepared by colleges for school guidance counselors.

Schools extend use

Volume increases (38%): Through April 15, 57,827 parents had filed copies of the CSS Parents' Confidential Statement form with the Service, an increase of 38 per cent over the 41,827 parents filing forms in the corresponding period last year. A substantial portion of this increase was credited to the system introduced last fall of distributing the form to students through their schools.

Schools will again be asked this fall to order copies of the PCS form for all students interested in applying for admission with financial aid at participating colleges. Comments by school representatives at the recent series of CSS regional conferences indicated that availability of the forms through the schools not only resulted in more widespread knowledge of financial aid opportunities among students, but proved helpful in the schools' guidance programs.

Another factor held responsible for increased use of the PCS form was the continued increase in the number of participating colleges. As of April 15, the number totaled 254, 56 of which are not member colleges of the College Board (see list, page 33). The 1958-59 participants totaled 196.

Fees reduced

For students and colleges: Starting next fall, students will be charged $2 for each transcript of the PCS that they request the CSS to send to colleges to which they are applying. This year's fee schedule is $3 for the first copy and $2 for each additional copy. The initial $3 charge was introduced last fall with the additional service of making and giving on all forms a standard computation of the amount the family could reasonably be expected to afford toward the applicant's college costs. Operating economies and increased volume made the fee reduction possible.

At the same time, the annual fee charged colleges for participation in the Service was lowered. The participation fee, which has been $100, will be $50 beginning next year.

Meeting plans

Regional conferences: Plans for a second annual series of CSS regional conferences will be announced to participating colleges and to interested colleges, schools, and agencies late this spring. On the basis of interest shown in this year's series of seven conferences, a greater number of meetings is planned next year.

End